

THE IRON AGE

New York, January 17, 1929

ESTABLISHED 1855

VOL. 123, No. 3

Makes 175,000 Piston Rings a Day

About 2500 Sizes Produced by
Perfect Circle Co.—System of Daily
Reports Keeps Record of Each
Molder and All Castings



PRODUCTION of 175,000 individual castings is the daily performance of the gray iron foundry of the Perfect Circle Co., Newcastle, Ind. This company's main plant is located at Hagerstown, Ind., with another plant at Tipton, Ind. Until recently it purchased its castings from jobbing foundries, but its demands became so heavy and so specialized that it has now established its own foundry to make piston ring castings.

Devising a system whereby 2500 different sizes of piston rings can be made in conformity with the needs of the company's customers and with no appreciable loss in the economies practised in the average foundry is a problem which would tax the ingenuity of any foundry executive, but such a system has actually been placed in operation at this new foundry. Benefits from lowered production costs have accrued from close control of manufacturing schedules, from effective use of overhead monorail conveyors for transporting materials, from installa-

tion of special molding machines and from the continuous pouring practice in the casting of piston rings.

Simple System Records Details of Production

To simplify the matter of following up work in process and of assuring its completion at the proper time, the manager has, on the wall of his office, a production board at the left side of which are listed the name of each molder and his machine number. At the left top of the board is the name of the month, while on the board are vertical columns designated for each day of the month. Every Friday the production manager receives from the company's main office a schedule of orders covering the next seven days' requirements. Each order is then placed on the board on the date it is due. In order to check the daily progress of the work in process, a card giving the daily output is moved horizontally across the board from day to day.



SINGLE-RING, four-ring and six-ring flasks are used and a single ring can be made in any of them. The pattern plate base of each flask is interchangeable with that of every other flask, provided for by a patented design

Information for this card is obtained from a form called the "molder's daily production record," which lists the name of the molder, the customer, the pattern number, number of molds poured, pieces in each mold, total pieces made, number of good pieces, number of bad pieces, number of pieces for which a scrap allowance will be made by the management, number of pounds of good castings and number of molding hours. Part of the data is filled in by the timekeeper at the end of the working day, while the remainder is added by the inspector when the piston rings pass through the inspection department.

Daily Production Record Keeps Track of All Molders

The "molder's daily production record" is a history of the activity of each molder in the foundry. From it the comparative value of molders can be ascertained by the amount of work they turn out and the wages which each molder has earned.

In order to have accurate information in regard to piston ring castings, the company each day makes a detailed check of all operations. From eight reports, stating the happenings throughout the foundry, is obtained the necessary information for a daily condensed report sheet. This report sheet furnishes the information for the weekly report, and the latter, in turn, supplies data for a monthly summary.

Report No. 1 gives the facts about the chemical and physical properties of pig iron, scrap and deoxidizers, and the results of a check of the shippers' analysis made by

the foundry laboratory. In a similar way report No. 2 deals with coke and lining material sand. From both these reports information is taken for mixing and melting the iron. The cupola report (No. 3) contains the proportional mixture; its estimated and actual analysis; the amount of bed coke, charging coke and flux used; their physical and chemical properties, and the weight of lining material. In order to insure uniformity in the temperature of the iron, the room temperature, the barometric pressure and the blast pressure and volume at the cupola are recorded. The heights of the bed and of the iron and coke charges are controlled, and chill, fluidity tests and slag analysis are made. Report No. 4 gives information about the original proportional mixture of the sand heaps on the floors, their weight, chemical and physical conditions, etc.

Besides the molder's name and the pattern and gate number, remarks regarding sand, iron, and ladles are put on report No. 5. Because defective castings can be produced by an impaired condition of the molding equipment, equipment faults are recorded, the accurate tracing of defective rings thus being made possible. The night report (No. 6) accounts for missing and broken rings, changes in sand heaps, means of cutting and the amount of water added. The inspection report (No. 7) gives detailed information about the amount and percentage of factory loss. Samples of the rings to be shipped are subjected to a thorough physical, chemical and micrographic examination, the number and percentage of sand and gas



CASTINGS are carried through the inspection department (left) in large metal containers suspended from a monorail conveyor

THE foundry (right) is unusual in that two 60-in. cupolas and the molding department are on the second floor. There are 58 "floors" or sections in the molding department, each floor being operated by a molder



A record of each heat is kept on file in the testing laboratory in case any question about piston rings might arise.

Promote Employees from the Ranks

Armco Policy of Preparing Men for Advancement Has
Resulted in Better Esprit de Corps and
Lower Labor Turnover

ONE of the most costly processes in industry is to train an employee thoroughly and then lose him. This seldom happens at the plants of the American Rolling Mill Co., Middletown, Ohio, and the reasons are to be found in the methods by which the management has aided its employees to develop their abilities, and thereby to realize their ambitions.

Promotion within the organization is a policy consistently adhered to by the company. This plan is followed wherever possible and has many advantages, the most important of which is the stimulating effect on workers throughout all operating divisions. Men who know that they will be considered for promotion whenever an opportunity opens up naturally not only take more interest in their work, but also are encouraged to prepare themselves by study and extra effort for more important duties. This policy has resulted in a substantial saving in time and money required to train inexperienced men, and has done away with the necessity for "breaking in" men under operating conditions, causing loss of materials and contributing to misdirection of labor.

Promotion from the Ranks a Company Policy

Knowledge on the part of employees that the company promotes them whenever possible has automatically set up a competitive condition in all departments. Each man seeks to raise the standard of his work above that of his fellow employee and thereby win recognition. It thus becomes the obligation of the management to keep itself constantly informed of the progress being made by all employees.

Offhand, it seems impossible for the management to keep in intimate, personal touch with some 10,000 employees; nevertheless an effective way of doing this has been established. The director of employment, who reports directly to the management, visits each of the company's plants every month, talking with the works manager, the local personnel supervisor, the foremen and

the individual workmen. In this manner he familiarizes himself with the situation in each plant and acquires definite information to pass along to the management.

All of the men in the organization, from the top to the bottom, know the purpose of the visits. In fact, the men are told by the local personnel supervisor that the director of employment wants to know them and to acquaint himself with their records so that he can accurately convey to the management information as to their qualifications for more important positions.

Whenever a promotion is made, the director of employment sends to the works managers, assistant works managers, general superintendents and to the heads of departments directly concerned a letter informing them of the change. The letter, bearing the signature of the director of employment, is reproduced in the *Armco Bulletin*, which goes monthly to every employee. Thus "Armco" men are apprized of the fact that changes are constantly being made within the company and are provided with definite evidence that the management is desirous of rewarding each employee whose record and

ability show that he has outstanding merit.

How Candidates Are Groomed for Better Jobs

By means of the periodic visits of the director of employment, as well as the close contact with the men maintained by the local personnel supervisor at each plant, the management has presented for its consideration only a few selected names when a vacancy in an important position occurs. The selection is based on experience over a long period of time rather than on a hurried investigation made as a result of the necessity for a new appointment, and under the circumstances the possibilities of making a mistake are almost entirely eliminated.

In certain hazardous and difficult jobs, where a man cannot be replaced by a green man, a candidate is selected by the management and is trained for the work on his own time. A case in point is that of an electric crane-



CRANE Operators Are Given a Thorough Examination and Must Pass Certain Tests Before Their Final Selection. Eligible men are assigned practice hours on their own time

man. To operate a crane competently requires considerable skill, and a man cannot handle the job with safety to himself and his fellow workmen without adequate training.

The candidate selected receives from his foreman a release card, bearing the approval of the chief electrician and of the medical department, which passes on his physical condition, especially his eyesight. He then goes after working hours to the crane man for a practice period, punching a practice time card when he starts and finishes

establish a reputation for dependability unless they do their part. To fail in that performance would mean the loss of business which, in turn, would result in less work for them.

To give the executives of the company an intimate picture of the personnel, a book reposing on the desk of the president, of the general manager and of every works manager contains the photograph and history of every technical and well trained man employed in recent years. Accompanying that information are notations giving an

| (PERSONAL RECORDS) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

CODE

No mark—Present full day

A—Absent

L—Late

E—Left Early

M—Missed

F—Finished

S—Sunday

INDIVIDUAL ATTENDANCE RECORD
FORM NO. 1811 (10-28-28) 8727-1

REMARKS

THE Employment Department Has the Daily Attendance Record of Each Employee (Above)

INDIVIDUAL PAY ROLL RECORD
FORM NO. 1811 (10-28-28) 8727-1

| Week | HOURS AND RATES | STRAIGHT TIME PAY | BONUS PAY | GROSS PAY | Week | HOURS AND RATES | STRAIGHT TIME PAY | BONUS PAY | GROSS PAY |
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| 26 | | | | | 52 | | | | |

ON the Opposite Side of the Attendance Record Is the Payroll Record of the Same Worker (Below)

each lesson. The practice time card is turned in to the management, which keeps an accurate check on the time spent in training by the candidate. Incidentally, the crane operator, knowing that a better position may open up for him, is anxious to give the candidate as thorough instruction as possible.

This system of training is followed in many departments. It assures a minimum lapse in efficiency and enables the company to anticipate its needs and avoid emergencies.

System Makes for Steadier Operations

At Middletown, where the company still operates hand mills, the company has not lost a turn, even in the summer months during the hottest weather. Since there are no breaks in production, the company has been able to keep its promises to customers and to run at capacity without interruptions. The attainment of this record has been possible only by winning the confidence of employees and instilling in them a sense of responsibility. They realize that the company cannot hope to prosper and to

estimate of the man's ability, with possible reference to the future position for which he is being trained.

The policy of promoting men all along the line when a vacancy occurs in the ranks might not be so desirable from the company's standpoint were it not for the fact that every man who is advanced has made a close study of the job just ahead of him, as a result of practical courses offered by the training department. Unless he has voluntarily indicated a willingness to familiarize himself with the duties of his immediate superior, he is not considered worthy of promotion, because he is lacking in ambition. The simultaneous appointment of a number of men to new jobs ordinarily would be disconcerting to the efficiency of an organization, and the procedure would be expensive, but under the Armco system there is a minimum of interruption to normal activities. The plan of appointing a superintendent and hiring a laborer, because all of the men in intermediate positions are promoted, has contributed to, rather than detracted from, general efficiency.

There is still another important consideration that has

at least partly determined the management's adherence to the policy just described. By promoting its own men, the company has an intimate knowledge of the qualities and characteristics of the employee chosen for each specific undertaking. On the other hand, if an outside man were given a responsible position, it would take him a year or two to become as familiar with the company's policies as the men under him. Since the company's products are mostly specialties, he would have the added disadvantage of lacking the right kind of experience. Therefore he would have the double burden of training himself in Armco policies and in learning the peculiarities of the company's products. It is not surprising, therefore, that the system of employment has lent itself admirably to the development of young men who can be thoroughly grounded in Armco policies.

The company has attempted to give preference to men of superior education, experience and training in adding to its roster of employees. This has led to the creation of an "employment reserve," which functions as an emergency squad in filling temporary vacancies in the ranks of mill employees and from which permanent employees are recruited. Establishment of the employment reserve has resulted in having available for mill work and for other positions requiring at least some small degree of skill a group of men who fit into the regular organization with a less than normal amount of disturbance.

Labor Audit Made Annually

Once a year the company makes what is known as a labor audit. The record of every man is reviewed in conference with his superior and often with his associates. The audit begins with men of such rank as the general manager of sales, works managers and other division heads, and in the discussions the man's availability for a better position is considered. After the audit has been completed, the information is carded and indexed, and the men are divided into three classes: first, those who are

making excellent progress; second, those who are holding their own, but have not made any noticeable advancement; and, third, those who apparently have failed to live up to expectations. In the case of the latter group, the management attempts to learn the reason for the lack of progress and often supplies a remedy by transferring a man to a position better suited to his ability and temperament or by pointing out ways and means by which he can improve his standing.

The annual labor audit and periodic visits to the company's plants enable the director of employment to keep before him fresh data about every man in the organization. No matter how remote a man may think his work is from the eyes of the management, he need not fear that his efforts will remain unnoticed.

Employment Department Has History of Each Worker

A history card of every worker is kept on file in the employment department. This contains the usual personal description, date and place of birth, number of dependents, date of employment and every transfer from job to job or change in rate. In addition, it lists the outstanding things the worker has done and any serious difficulties in which he may have been involved.

The individual attendance record of each employee is filed in the employment department, space being provided on each card for information about attendance during an entire year. On the opposite side of the card is the payroll record of the same employee, with information about straight-time pay, bonus pay and gross pay for each of the 52 weeks.

When an employee fails to report for work, the time-keeper replaces his time clock card with a red absent card. If he does not return to work on the following day, a representative of the personal service department "lifts" the absent card and ascertains from the employee's foreman whether the absentee has been laid off for a legitimate reason. If this is not the case, the representative visits

| Form 1250-5 1928 1500 | | | | | | | | | | EMPLOYMENT DEPARTMENT RECORD | | | | | | | | | | W. ED. DIV. - BEN. HAND INC. - 8A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| NAME | | | | | | | | | | NATIONALITY | | | | | | | | | | CITIZEN U. S. | | | | | | | | | | SERIAL NO. | | | | | | | | | | LOCAL ADDRESS | | | | | | | | | | PHONE NO. | | | | | | | | | | JOB APT. O'S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| DEPARTMENT | | | | | | | | | | RELATIVES HERE | | | | | | | | | | DEPARTMENT RELATION | | | | | | | | | | DEPENDENTS | | | | | | | | | | HEIGHT FT. | | | | | | | | | | WEIGHT LBS. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| OUTSTANDING CHARACTERISTICS | | | | | | | | | | | | | | | | | | | | HAIR | | | | | | | | | | EYES | | | | | | | | | | BUILD | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| INTERVIEWER'S OPINION | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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A History Card for Every Worker Is Kept on File by the Employment Department

| THE AMERICAN ROLLING MILL COMPANY MIDDLETOWN, OHIO PERSONAL SERVICE DIVISION REPORT ON ABSENT EMPLOYEE | |
|---|--------------|
| NAME | CHECK NUMBER |
| ADDRESS | DEPARTMENT |
| FOREMAN'S REPORT: | |
| REPORT OF VISIT: | |
| | |
| | |
| SIGNATURE | DATE |

A Representative of the Personal Service Department Reports His Visits to Absentees

| | |
|--|--------------------|
| No. 20211 | Expires |
| Mr. _____ | Check No. _____ |
| is entitled to | |
| PRACTICE on the _____ for | |
| four weeks beginning _____ | |
| OK _____ | Present Dept Supt. |
| OK _____ | New DEPT. _____ |
| OK _____ | Employment Dept. |
| This card may be renewed by the Employment Department at the written request of the _____ Department Superintendent. | |
| (OVER) | |

CARD Entitling Employee to Practice Running Equipment Prior to Promotion

the employee at his home to find out whether he is ill. The representative then fills out a report about the absentee, which is filed in the personal service department. In order to resume work, the employee must get from the personal service department his red absent card, must be examined and declared to be "able to resume work" by the medical department, and must take the card to the timekeeper, who gives him his clock card.

New Men Recruited by Employees

Many desirable men have been recruited by the American Rolling Mill Co. through its employees. When additional workers are not available within the organization, the employees are invited to recommend someone. Some executives might think this a questionable procedure, but it has proved successful here. Employees know the work and the qualifications required to do it; they know that it will be to their credit if they recommend a man who makes good; and they have a better knowledge of the character and ability of an acquaintance and how he will fill the job than an employment man can have of a stranger. Men of all classes have been secured by this method.

No one is employed by the company until he has been given a thorough physical examination, which assists materially in determining the kind of work for which he is best fitted.

Employee Insured After Year of Service

When a new worker is conducted to the department to which he has been assigned and is introduced to the foreman, his period of probation begins. Whether he becomes a permanent member of the Armco organization depends, first, on how satisfied he is with his work and with the treatment he receives, and, second, on how satisfied the company is with the way he performs his duties. It is during the probationary period that selection is really made. No man is considered a permanent member of the organization until he has been employed one year. At that time his life is insured at no cost to himself in an amount equal to one-half of his anticipated annual income, with a minimum of \$1,000 of insurance. Furthermore, he can purchase at cost an equal amount of insurance in addition. After he has been in continuous service for one year, he is eligible to vote for members of an advisory committee of his department and to be elected to the committee.

In addition to six departments devoted to personal service work, contact with the employees is maintained through advisory committees, of which there are approximately 150, representing every group in the company.

Members of these committees are elected annually by secret ballot. It is the duty of each committee to take up with the department superintendent anything which, in their opinion, is not being properly handled. It may be a question of production or a personal matter. The superintendent likewise may call upon the committee for advice or may impart to it information that he thinks it should possess.

Management Explains Policies to Employees' Committees

Each department committee meets whenever need for its action or for its services arises. On call, all of the committees assemble as a general advisory committee under the chairmanship of the general manager of the company. This committee holds the same relation to the general management as the department committee to the individual department. Its functions are to advise and learn the policies of the management, to convey to the employees whom they represent an understanding of these policies, and to reflect the sentiment of the employees on such matters as may be of help to the management.

It is the opinion of the company that a definite statement of carefully formulated policies, whereby the workers know the management's stand on matters of prime importance, creates confidence among the employees. For instance, in the matter of compensation, the published statement of the American Rolling Mill Co. declares that "It is Armco's wage policy to pay for every class of service a standard of compensation as high as is current in competitive industries." Furthermore, "it is Armco's ambition to develop an organization of such spirit, loyalty and efficiency that it will be possible for individual members to earn and receive better compensation than if performing a similar service in other fields of effort."

The attitude of the management has been well summarized by Charles R. Hook, vice-president and general manager:

"From its very inception, Armco has pinned its faith to men. It has admitted and insisted that it must stand or fall according to its ability to gather around it a group of able, earnest, loyal and thoroughly trained men, sufficient in number to meet the need of each succeeding period.

"It is the ambition and purpose of the Armco management in all its dealings to combine in proper proportion a spirit of fairness, a square deal always, both in theory and practice, a big broad view of every problem, a spirit of unselfishness, of loyalty and of courtesy to and consideration for every one."



Mill to Roll Split Rails into Bars

Head and Base Run Simultaneously Through Same
Stands—Building to House Fabricating
Plant, Also

REROLLING rails will be hot split midway between tread and flange in the first break-down stand of a new 10-in. mill recently erected by the Barton Spiderweb System, Inc., Chicago, fabricator of steel reinforcing bars. The rolls in the first and succeeding passes are so designed that the head and flange sections of the rail, on each of which is retained a part of the web, will be rolled concurrently, with the one heating.

The steel structure which houses this mill consists of a single bay 100 ft. wide by 604 ft. long. The roof

Random lengths of rails shorter than 15 ft. will be stored as received. Long rails will be cut to this length in a motor-driven, jaw-type shear.

This crane will deliver rails to the duplex oil-fired furnace, 30 ft. wide by 15 ft. long, which was built by the Chicago Flexible Shaft Co., Chicago. Fuel oil is unloaded by gravity from tank cars. Above the doors at the discharge side of the furnace are overhead jib cranes, from which are suspended forks by means of which heated rails or billets are removed from the furnace and un-



Charging Side of the Rail and Billet-Heating Furnaces, Which Are Oil-Fired. The brick structure beyond the furnaces is the roll-turning room

covering is of tile, made by the Federal Cement Tile Co., Chicago. The framework was erected originally at the Sparrows Point, Md., shipbuilding plant of the Bethlehem Steel Co. Later the building, dismantled and shipped to Chicago, was erected at the west end of the Barton property, which is bounded on the north by the Chicago drainage canal and on the south by the main right-of-way of the Santa Fe railroad. This location on the canal suggests the construction of a dock which will facilitate the distribution of bar mill products by barges operating on the Illinois deep waterway system, now being constructed.

A 10-ton overhead crane (Whiting Corporation, Harvey, Ill.) travels the full length of the building, serving for unloading and stocking rerolling rails and billets.

loaded on the motor-driven transfer rolls for delivery to the first break-down stand.

Designed by the United Engineering & Foundry Co., Pittsburgh, the mill consists of six three-high 10-in. stands, of which four are designated as the break-down units. They are direct coupled one to the other and are driven, without reducing mechanism, by a 250-volt, 150 to 300 r.p.m., 500-hp. direct-current motor. This, like all other electrical equipment, was furnished by the Westinghouse Electric & Mfg. Co., East Pittsburgh. The other two 10-in. stands (finishing) are coupled together and are driven by a 300-hp., 225 to 450 r.p.m., 250-volt d.c. motor.

One end of each roll is grooved to roll the head section of the rail and the opposite end is designed to take the



Four Break-Down Stands Are Direct Driven by One Motor and the Two Finishing Stands (at left) Are Similarly Driven by a 300-Hp. Motor. A 10-ton overhead crane traverses the length of the building. The substation shows, outside, at right of furnaces

flange section. This is a combination bar and merchant mill having a rated capacity of about 2000 tons to the 9-hr. shift, when rolling either billet stock or old rails. Sections which will be rolled include rounds from $\frac{1}{4}$ -in. rods to 2-in. diameter bars; squares of corresponding cross sectional area; angles from $\frac{3}{4}$ -in. to 3 in. x 3 in. and beams from $1\frac{1}{2}$ in. to 6 in.

Looping floors slope away from both sides of stands Nos. 2 to 6. Raw stock, having been heated, split and rolled, is passed from No. 6 stand to a set of motor-driven transfer rolls which extend along the north side of the 18-ft. 6-in. x 200-ft. cooling table. This table was

erected along the south building wall. A roller transfer at the opposite side of the table delivers the finished product to a United vertical-type shear, which will cut to length the full range of sizes and classes of products made in this mill.

A large section of the building, opposite the cooling table, is reserved for the storage of finished products in mill lengths, and for a reinforcing bar fabricating shop. In this way there are housed under one roof the raw material, rolling mill operations, storage of finished products and fabrication.

Rolls are turned in a United 18-in., high-duty, double-



Cooling Bed Is 18 Ft. 6 In. Wide by 200 Ft. Long. The two finishing stands and their pinion set are in front of end of cooling bed. Space at the far end and to the left of table will be used for storage and fabrication

end lathe, placed in a brick inclosure accessible to the rolling mill. The mill crane serves the lathe shop.

Electric current is purchased from the Commonwealth Edison Co. High-voltage cables lead to a substation which stands adjacent to the mill building. Transformers step down the voltage for use in miscellaneous motors throughout the plant and a motor-generator set furnishes

direct-current power for the two main mill motors.

With the addition of this rolling mill the firm's name becomes the Barton Steel Co. Its officers are Francis M. Barton, president; A. J. Darling, vice-president and treasurer; and T. F. Petersen, secretary. A. D. Thomas, formerly associated with the United Engineering & Foundry Co., is works manager.

I-Beams Welded to Butt Plate Make Efficient Splice

BY A. W. SCHENKER, M.E.*

SPLICING of girders is a necessary evil since both mill limitations and transportation requirements restrict the lengths of sections. Design of the riveted splice has been thoroughly standardized and embraces theoretical and empirical considerations. To date, a conventional welded splice has simulated the riveted splice. In other words, it consists of top and bottom flange plate and a pair of web plates. This set of plates is designed to develop the section modulus of the beam, and the lengths of the plates are determined by the amount of welding required to transfer the stresses from beam to plate and vice versa.

Even this arrangement has decided advantages over the riveted splice as is proved by many thousands of these joints in use. Yet a careful study will reveal that it is greatly over-designed, and that it is therefore not economic, or to put it more correctly, this splice of welded cover plates is not economical enough.

Welding differs fundamentally from other methods of joining metals, since the ideal is to make the joined metals literally one. The ideal weld may therefore be described as a partition of metal having all the properties of the joined or parent metals. Welded splice plates are far from such an ideal.

The butt joint suggests itself as a nearer approach; however, it presents two major objections: (a) lack of ductility, and (b) impossibility of developing full strength economically.

Thus, if two I-beams are butt welded together, directly end to end, and then subjected to transverse bending, it will be observed that the deflections are much larger for successive increments of loading than for a plain unspliced beam of the same dimensions similarly loaded. Furthermore, the elastic limit is reached very quickly. To correct this condition it is necessary to build up such a large volume of weld metal at the joint that its cost becomes too great to be attractive.

The author recently designed a splice which seemingly meets the foregoing objections. A plate is placed between

the ends of the beams to be spliced and a fillet weld is deposited for the full perimeter of the section on both sides of the plate. The size of the fillets below the neutral axis is designed to take the tensile stresses set up in the flange while the fillets above the neutral axis can be made lighter. Incidentally the partition plate acts as a stiffener for the web and flanges.

Experiments at Columbia University were made by W. J. Krefeld, engineer of tests of the Department of Civil Engineering. Four 6-ft. lengths of 5-in. 10-lb. standard I-beams were tested, two unspliced and two with a central butt plate, 4 x 6 x $\frac{3}{8}$ in., as illustrated. The fillet weld extended about $\frac{7}{16}$ in. from the contact. Each was tested as a beam of 5-ft. span, one pair under central loading, and one pair at third points, the latter throwing some shear into the weld. Deflections were measured at 500-lb. increments; a few of the readings are given in the table. It was found that the welded splice developed the same strength and stiffness as the continuous beam (within the limits of accuracy of the test) in either variety of loading. All failures were caused by buckling of the upper flange; no failures were produced in the welds.

Results of such studies verify the theory upon which the design of this new splice is based. Its practical advantages and the economies effected are so obvious, despite its somewhat bizarre construction, that it is hoped it will arouse the ultra-conservative engineer to the many other advantages of welding.

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| Load in Lb. | Central Loading | | Third Point Loading | |
|------------------|-----------------|------------|---------------------|------------|
| | Welded Beam | Plain Beam | Welded Beam | Plain Beam |
| 2,500 | 0.032 | 0.029 | 0.022 | 0.026 |
| 5,000 | 0.071 | 0.062 | 0.056 | 0.056 |
| 7,500 | 0.105 | 0.097 | 0.087 | 0.086 |
| 10,000 | 0.144 | 0.131 | 0.115 | 0.115 |
| 12,500 | 0.186* | 0.164 | 0.146 | 0.142 |
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*Approximate location of proportional limit.



Butt - Spliced Beam After Loading Until Upper Flange Buckled — No Damage Done to Joint

*Chief engineer, Electric Welding Co. of America, Brooklyn, N. Y.

Steel Shows No Overproduction

Large Volume of Consumption Causes Heavy Demand—Prices May Be Now as High as They Will Go

BY DR. LEWIS H. HANEY

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WITH the production of steel and pig iron so nearly at peak levels as is now the case, it is unusually important to note the present conditions and prospects of consumer activity.

As anticipated, our composite demand line declined in November. This was due to a sharp reduction in the automobile output and a moderate decline in building, which were only partly offset by increases in mining and oil production, general manufacturing and farm purchasing power. Railroad requirements and exports showed little change.

This decline in activity among consuming industries, however, was attended by a reduction of steel production in November that left the output in good adjustment with the indicated current requirements.

Demand and Production in Close Adjustment

DECEMBER data, however, indicate an increase in the rate of steel production, since the decline which occurred was less than seasonal. This leaves the production of steel ingots but little below peak levels again.

What of the potential demand in December? Close estimates show that railroad freight traffic fell off more than usual. Building and construction contracts declined and were at the lowest annual rate since last March. Automobile production apparently made no considerable gain. Owing to an unfavorable price trend for agricultural products it does not seem that farm purchasing power is quite so favorable. Probably, therefore, the actual requirements for steel in December showed a moderate decline that will bring the composite demand line very close to the production curve, though it still remains true that no overproduction of steel is indicated.

The situation resembles somewhat that in the latter part of 1926, both as to the levels of demand and supply and as to the trend of the production and demand curves. Production, however, is now higher in comparison with requirements than then, so that there is less room for expansion.

Of course, it will be noted that we are talking here of potential current requirements. Actually a good deal of anticipation of future requirements

occurred in December, forward buying being stimulated by announcements of price changes. Orders released in December appear to have anticipated first-quarter requirements to a considerable extent in the case of sheets and nails.

Conditions in Specific Lines of Activity

As to the future, we find the railroad outlook fair and moderately improving. November earnings were favorable; both gross and net were under the same month of 1926, but were well over 1927. The ability of the carriers to show net income in recent months favors larger purchases of steel, especially in view of the economies that have been practised in maintenance during the last two years. The prospects for equipment manufacturers are better than a year ago, and current reports indicate gains in orders for both freight cars and locomotives, which will tend to sustain the demand for plates.

The outlook for the automobile business favors a high rate of production during the first three or four months of the year, though what will happen thereafter is doubtful. The manufacturers are advertising heavily and are offering better values than ever. Export business in automobiles continues good. The sharp curtailment in the latter part of 1927 leaves room for continuation of expansion for a time. It still seems, however, that before the year is over a good many of the manufacturers will be forced to curtail.

The building situation is discussed below. The general trend of building erection is downward, but the situation is relieved by prospects of occasional large construction items in the nature of public works, utilities, etc. Trade reports indicate keen competition in fabricated structural steel, while new business in sight is relatively small and the fabricators' backlogs are reduced.

Oil drilling continues active and record-breaking production has developed. These developments are affording considerable business in casing and tank material, which should continue for at least another month or two.

These seem to be the chief developments affecting the near future of the demand for iron and steel. They sug-

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AS the year 1928 closed, construction contracts awarded were at the lowest level since January, December totals embracing 65,201,000 sq. ft. in comparison with 63,717,000 sq. ft. in the earlier month. January contracts, however, are normally the low point of the year. We must make allowance for seasonal variations. Considering the season, and taking the monthly average for the years 1921-1927 as 100, we find the December contracts to be 120.7, in comparison with 124.8 in November and a June peak of 130.9. Thus it seems fair to say that the trend is moderately but distinctly downward.

Moreover, contemplated new construction in December, considering the season, was the lowest since February, 1927. The value of plans, as reported by F. W. Dodge Corporation, usually increases in December. This time the figure was only \$725,000,000, against \$931,000,000 in November, and \$989,000,000 a year ago. The trend has been clearly downward since the middle of the year. Contracts awarded, too, are high in comparison with contemplated new construction.

We may add that Bradstreet's building permits show a decline of 6.9 per cent from November and were nearly 15 per cent under a year ago.

Fabricated structural steel lettings amounted to 243,800 net tons in November, which is a slight increase from October and is 22 per cent above the average for the years 1921-1926. Official December figures are not yet available. According to weekly trade reports, however, the trend was sharply downward during that month, and both the awards and the pending new projects were small in the first week of January.

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covery from 10 per cent below normal in December a year ago.

The steel production curve as shown in the third chart, however, gives one the impression that it is rounding off from a high level. The December adjusted index is below September and October and is less above November than it is below October. This impression is perhaps strengthened by the decline in the composite demand line, and it may also be noted that our P-V line has continued its gradual decline. Of course, the normal seasonal trend of steel production is upward, beginning with January and running through March, and seasonal influences already are apparent, but we doubt if the full seasonal expansion occurs in the first quarter.

Unfilled orders reported by the United States Steel Corporation made a fairly satisfactory gain in December, the increase being somewhat above the usual seasonal amount. The figure is now slightly larger than a year ago and also a few thousand tons above that existing at the end of 1926. The difference is not great, however, and with those exceptions the unfilled orders are the lowest year-end totals in many years. Whether such increase as occurred was influenced by price tactics will become more apparent in reports of following months.

The average price of finished steel in December, according to THE IRON AGE index, was 2.385c., which compares with 2.368c. in November and 2.310c. a year ago. Thus the trend has been slightly upward. At present no clear trend in steel prices is apparent. Most competent observers appear to agree that present prices are in part not thoroughly tested. We are inclined to think that steel prices have reached the peak of their moderate recovery. Production is high and is well up to indicated requirements, and the average price of finished steel is relatively high in comparison with the general level of commodity prices.

Overproduction of Pig Iron?

Pig iron production continued its upward trend in December. If we allow for seasonal variation and normal growth, the output was the highest since January, 1926. It is 16 per cent above normal. Thus pig iron production continues rather high in comparison with steel production. The sharp increase in the number of furnaces in blast may be a sign of approaching overproduction. Probably it is only a question of time until the usual necessity for curtailing production will arrive. Judging by precedent, however, it may remain at

around the present level for a period of from three to six months.

The advance in pig iron prices appears to have been definitely checked. The average for December was \$18.51, which was only 2c. above the November average. A week ago THE IRON AGE index was \$18.46, which was below the November average. But for the rise in steel scrap, we would say that pig iron prices had definitely passed their peak, and would decline at once. The soaring scrap market, however, somewhat changes the situation. It makes pig iron cheap in comparison with scrap, so that steel makers are likely to use more of their iron and thus offer less competition with merchant furnaces.

However, the demand for pig iron continues dull, and, regardless of the supply situation, this is likely to prevent much recovery in prices. Moreover, coke is cheap and shows no sign of advancing in price. Thus it would seem logical to expect pig iron prices

to be sustained at about present levels until the flurry in scrap prices is over.

Price Structure Nearly Normal

WITH one exception, the iron and steel price structure is the most nearly normal that has existed in a long while. The relation between pig iron, billets and nails is almost exactly normal, and bars and sheets are little, if any, below normal. The chief maladjustment is found in steel scrap, for which the December average price was the highest of any monthly average since September, 1926.

Steel scrap is now practically as high as pig iron, a situation which has been approached on only four occasions in recent years, namely, in September, 1926, the fall of 1925, and at the beginning and at the end of 1924. In all of these cases the scrap market was near a peak. In each case, too, this situation has preceded, by from one to three months, a downturn in pig iron prices.

Building Construction Broke Record in 1928

The 1928 construction volume was the highest in the history of the country, according to F. W. Dodge Corporation. Contracts let on new buildings and engineering work in the 37 States east of the Rocky Mountains during the past year reached a total of \$6,628,286,100. This figure was 5 per cent ahead of the total for the year 1927 and it was 4 per cent in excess of the total for 1926. The previous high record had been held by 1926. The territory covered in the 37 Eastern States represents about 91 per cent of the country's total construction.

There was \$432,756,300 worth of contracts let on new construction work during December. The above figure was 8 per cent below the total for November, 1928, and there was a drop of 9 per cent from the December, 1927, record. Analysis of last month's contract record showed the following important classes of work: \$178,323,100, or 41 per cent of all construction, for residential buildings; \$80,194,000, or 19 per cent, for public works and utilities; \$66,772,600, or 16 per cent, for commercial buildings; \$38,247,900, or 9 per cent, for industrial projects.

Contemplated new work was reported in this territory to the amount of \$725,178,800 during December. This figure shows a drop of 22 per cent from the amount reported during the preceding month and there was a loss

of 27 per cent from the amount reported during the month of December, 1927.

Spicer Mfg. Co. Acquires Brown-Lipe Gear Co.

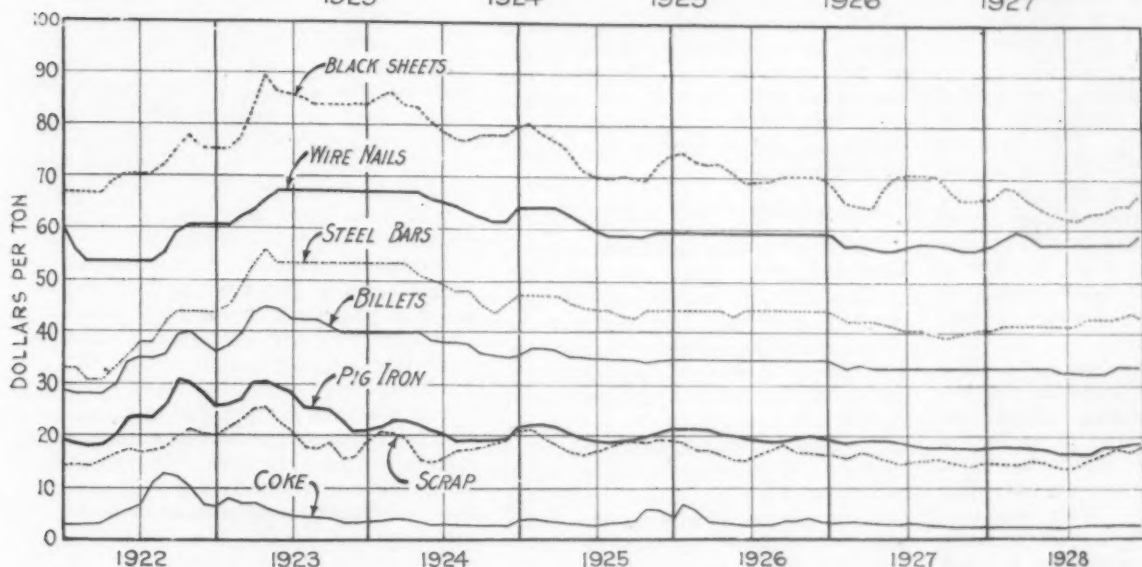
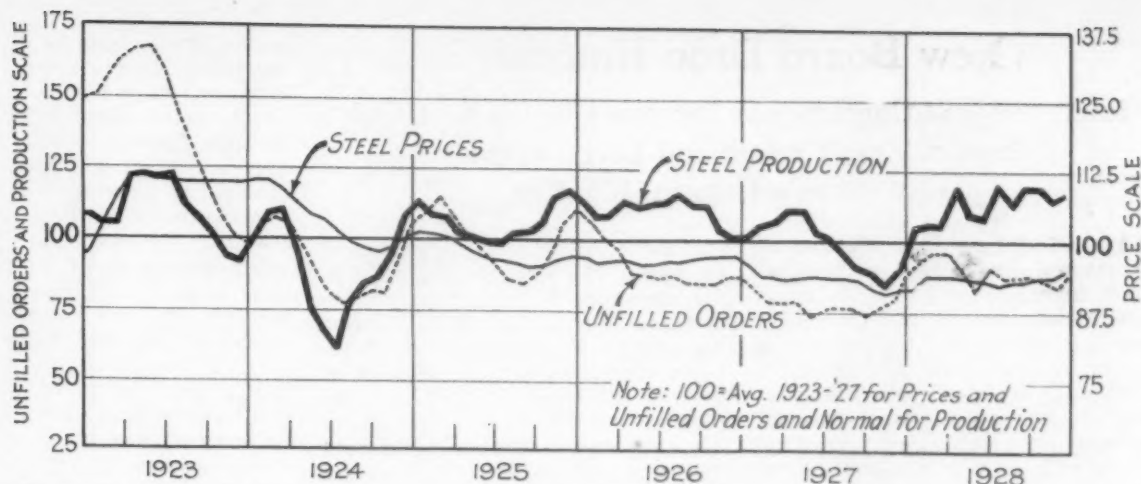
The Spicer Mfg. Co., South Plainfield, N. J., manufacturer of axles, frames, universal joints and other equipment for automobiles, has concluded arrangements for the purchase of the Brown-Lipe Gear Co., Syracuse, N. Y., manufacturer of automotive gears and transmission systems, and will operate as subsidiary organization. The purchasing company has arranged for stock issue to total \$4,235,000, a portion of proceeds to be used for acquisition and expansion. C. A. Dana is president.

Less Coal Mined in December

Estimates of the United States Bureau of Mines place the coal production of December at 43,380,000 net tons of bituminous coal and 6,218,000 tons of anthracite. Both showed reductions from November, that in bituminous coal having been about 6 per cent, while in anthracite the shrinkage was more than 16 per cent. Both totals, however, were higher than those for December, 1927, when, with one extra working day compared with 1928, bituminous coal output was more than 5 per cent lower and anthracite production almost 4 per cent less.

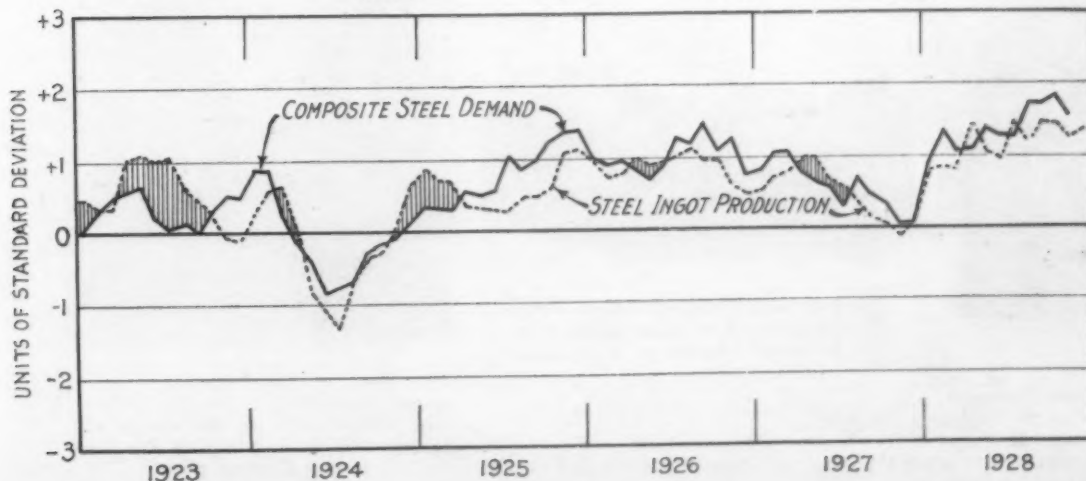
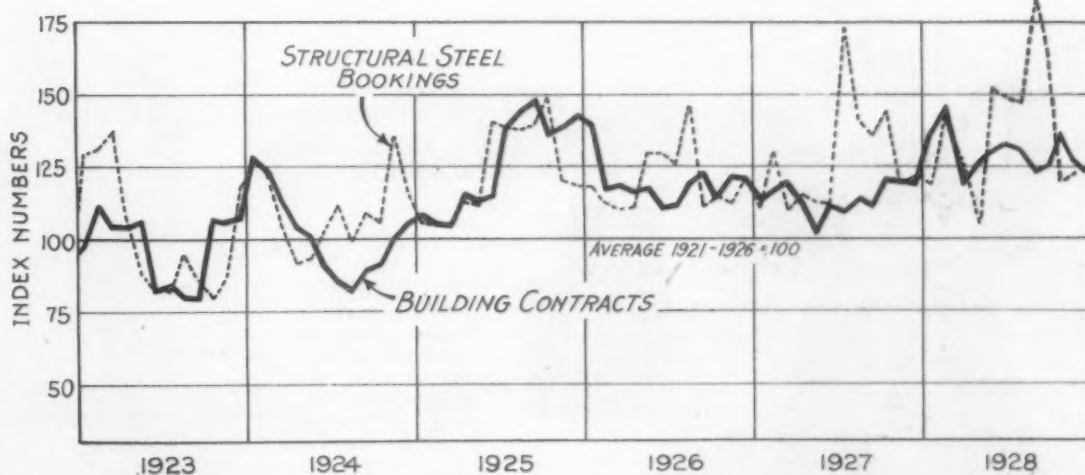
Schedule of the next instalments of the Business Analysis and Forecast, by Dr. Lewis H. Haney, Director New York University Bureau of Business Research, follows: Jan. 31—Activity in Steel Consuming Industries; Feb. 14—Position of Iron and Steel Producers.

Steel Production in December Was 16.6 Per Cent Above Normal Requirements. Prices may have reached a peak. Unfilled orders showed a fairly satisfactory gain



Except for Steel Scrap, the Iron and Steel Price Structure Is Almost Normal. Scrap prices appear to be ready for a smart decline and pig iron should hold present levels for another month or two

Building Contracts Have Started a Decidedly Downward Movement and Structural Steel Bookings Indicate a Tendency to Follow the Same Course



Steel Ingot Production (Adjusted) Showed a Rise in December, Following the Decline in November. Composite demand in November indicated a falling off which may prove progressive

New Board Drop Hammer

Improved Roll Construction Increases Board Life, and Interlocking Tieplate and Large Frame Seats Provide Unusual Rigidity

REDUCTION of breakage and of renewal costs, and the minimizing of down time due to adjustments were major aims of the Chambersburg Engineering Co., Chambersburg, Pa., in developing the new model H board drop hammer illustrated herewith. In addition to increased output and more accurate forgings, lower operating expense and the possibility of closer cost estimating for hammer work are attributed to the new design.

The machine is stronger and more rigid, as well as smoother and more convenient to operate. Features include improved roll construction, patented interlocking tie-plate, long tongue frame-to-anvil seat, adjustable guides, improved front rod and pedal construction and an anvil of 20 to 1 ratio. Alloy steel is used in place of carbon steel and steel castings in place of iron.

Longer life of the boards by some 30 per cent is attributed to the improved roll construction. Power requirements are reduced by mounting the roll shafts in roller bearings, which are lubricated from a reservoir formed in the head. This reservoir requires filling only a few times a year, and the arrangement is such

that any overflow is carried outside of the head. The bearings are sealed at the inner end to keep oil from the surface of the boards. Rolls of large diameter are intended to provide maximum contact area with minimum of damage, and destructive impact of the rolls on the boards is prevented by the cushioned front rod. Increased clearance between the rolls and the board, together with the full floating clamp, assures freedom of the board on the down stroke. The rolls are ventilated and, being cooler, operate with less friction. Compactness of design is said to permit the use of shorter boards.

Accessibility Features Front Rod

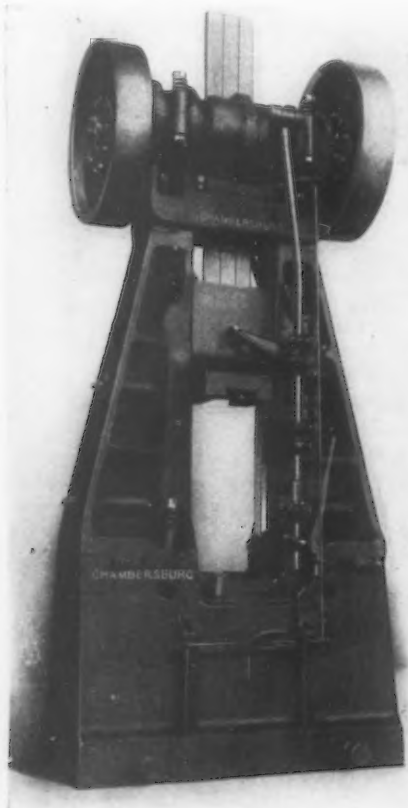
The front rod operates between two hardened steel rollers and both ends of its stroke are cushioned. The arrangement of the lower end may be noted from the close-up illustration. The lower roller on the pullback bears on the rod. A hardened tool steel track inserted in the clamp, its upper end butting against the stop, contacts on the upper roller, which is supported by the frame. In the top position the track rests on this roller and is cushioned against the stop. The stop slides on the front rod, at-

tached to the clamp by spring balancing bolts. In the down position the stop contacts on non-metallic cushions which can be added to or reduced to suit the boards. The large cushion area in contact with the stop is emphasized as insuring long life.

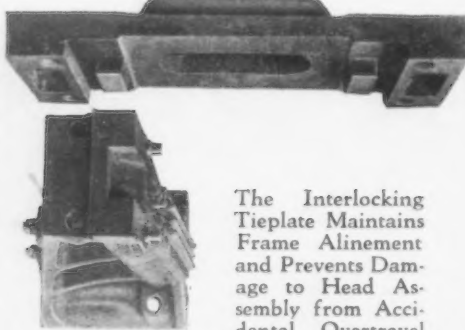
Accessibility of the front rod is a feature. By removing the pullback roller and pin, and rolling the release lever from its bracket, the front rod becomes free to swing outward as illustrated, for the renewal of any part. Tapered keyed connections with slotted jam nuts to take up lost motion have replaced all square clamped connections; one effect of this being more operation of the pedal.

Unusually long frame seats of I-beam section that are made without cores provide a solid anvil bearing and the stepped long guided joint is said to overcome tendency to twist or rock. As compared to the company's former models the bearing area is said to be increased 80 per cent, the thrust area 800 per cent, and resistance to twist 100 per cent.

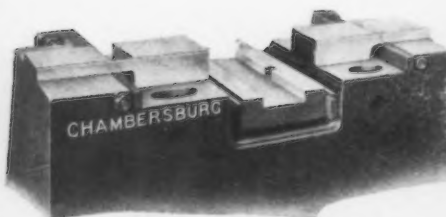
Patented stepped and tongued frame seats of the anvil are emphasized as playing a major part in the increased accuracy of forging. The male tongues of this seat are on the anvil, so that when the anvil gets hotter than the frames during operation the expansion of the tongues will maintain proper fit with the frames. A breather hole under each seat prevents accumulation of scale that would interfere with the fit. Wearing plates on the sides of the tongues can be



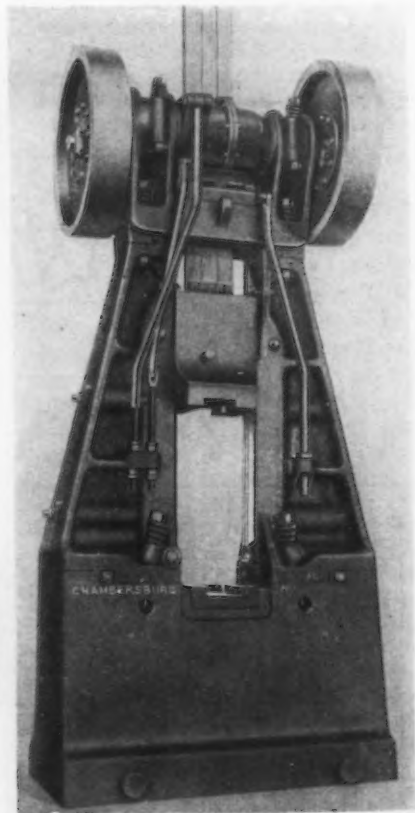
Safety Features of the New Hammer Include a Pedal Which Can Be Made Inoperative by Turning It Up Against the Anvil



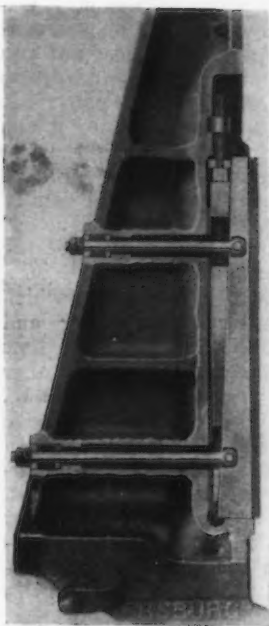
The Interlocking Tieplate Maintains Frame Alinement and Prevents Damage to Head Assembly from Accidental Overtravel of the Ram



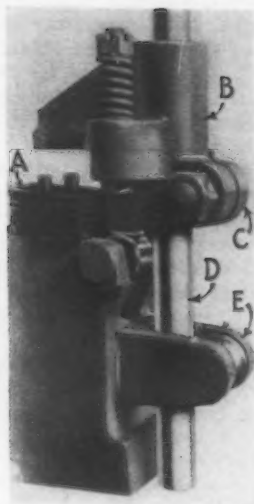
Stepped and Tongued Frame Seats of the Anvil Are Major Factors in the Increased Accuracy of Forging



The Rear of the Hammer (shown above) Is Clear of Treadle Connection. The clevis in the clamp adjusting rod gives complete freedom to the floating plate

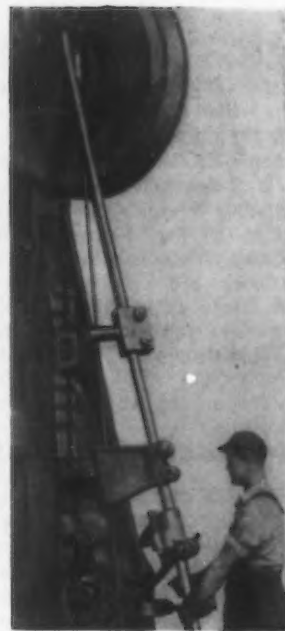


Adjustable Guides Permit Convenient Maintenance of Proper Ram Clearance. Guides May Be Renewed Without Removing the Ram (At Left)



The Lower End of the Front Rod, in the Up Position, Is Shown Above. At A are the adjustable cushions; B is the stop, C the clamp, D, the front rod and E the pullback

By Removing the Pullback Roller and Pin and Rolling the Release Lever from Its Bracket, the Front Rod Is Free to Swing Outward (At Right)



renewed without disturbing any other part of the hammer.

Precise die adjustment without sacrifice of die clearance is made possible by the micrometer scaled forged-steel adjusting wedges. Heat treated alloy steel through-studs are used in these wedges. Alloy steel frame-to-anvil bolts terminate above the floor and are held by non-freezing keys.

Forged steel-adjustable guides, supported entirely by the frames, independent of the adjusting means, provide for the accurate economical maintenance of proper ram clearance and alignment. Tapered steel shoes with full bearings on the guide and frame are adjusted by means of a bolt and spool which are locked in the desired

place. These bolts may be renewed without disturbing the balance of the hammer and guides may be renewed without removing the ram. Likewise the ram is removable over the tops of the guides.

The interlocking tieplate is designed to maintain frame alignment in all planes and, in addition, to protect the head. Twisting strains are absorbed in this member and accidental over-travel of the ram is prevented from damaging the head assembly. The destructive force of impact is said to be absorbed in the air and oil spaces between the laminated buffers of the tieplate.

A safety pedal that needs no guard replaces the former treadle, which ex-

tended across the anvil face. In the present arrangement the pedal is made inoperative merely by turning it back against the anvil, which obviates the hazard of accidental tripping. It can be shifted quickly to the position most convenient for the hammerman.

Increased roll shaft diameters and use of heat treated alloy steel is stressed as practically eliminating the hazard of falling pulleys. The patented front rod lever locks automatically when used to raise the front rod and requires two hands to release it. Safety lugs prevent cocking and falling of the ram should it accidentally ascend above the guides. The tieplate forms a stop for ram.

Full-Floating Nose Drive Reamers and Holders

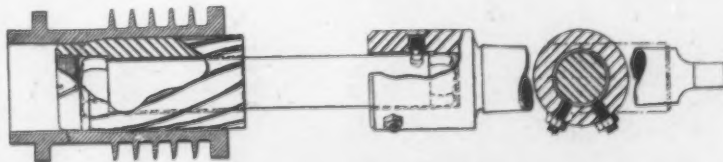
DRAW reaming quality is accomplished in the full-floating nose drive reamer illustrated, which is being marketed by the Gairing Tool Co., 1635 West Lafayette Boulevard, Detroit. The tool is driven on the nose, forward of the cutting edge, from the rear by means of a full-floating drive-shaft having hexagonal heads adapted to fit sockets of corresponding form in the reamer and holder, respectively.

The hexagonal cross-section of the driving shaft heads compels the reamer to rotate with the drive-shaft and spherical section of the heads longitudinally permits free universal action, thereby allowing the reamer to align itself freely with the bore of the hole to be reamed. Thus the full-floating elements permit the rear portion of the reamer, behind the pilot, to trail directly through the hole. The hexagonal drive is emphasized as distributing the torque radially to the six sides of the reamer, thereby eliminating tendency toward eccentric rotation.

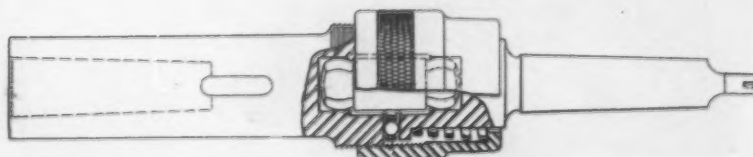
The pilot on the nose of the reamer should be from 0.002 to 0.004 in. under the bore diameter. When the tool is used in the horizontal position, the amount of sag on the forward end is adjusted by two screws provided on the holder, which are preferably set

to permit the pilot to sag approximately 1/16 in. below the work. With this amount of sag the drive shaft will be lifted free from the adjusting screws when the pilot enters the hole.

Manufactured of high-speed steel and finished by grinding on lapped



The Reamer Is Driven on the Nose, Forward of the Cutting Edge, and Full-Floating Action Is Obtained



Full-floating holder for use in vertical spindle drill presses

centers, the nose driver reamers are essentially finishing tools. The drivers and holders are of vanadium steel and heat-treated. The tools are made in several sizes, from $\frac{3}{4}$ to 6 in. inclusive, the $\frac{3}{4}$ to 2 $\frac{7}{16}$ in. being solid reamers and the 2 $\frac{1}{2}$ to 6 in. being the Gairing dovetail wedge inserted blade type. Reamers larger than 6 in. are made to special order.

Full-floating holders that permit taps or reamers to align themselves with the bushing or the work, even if the machine spindle or turret tool holders are off center or at right angles to each other, are also offered by the company. Because of the double universal joint construction of

the holder, the tool is said to follow through the hole on a true line regardless of the load. The holders are available in three types, for use in vertical drill presses, etc., for holding taps and for use in turret lathes, respectively, and in six sizes.

The collet is held against the ball thrust bearing by pressure from an adjustable spring collar. The drive is positive, the drive-shaft having a hexagonal head at each end, which heads engage the shank and tool holder, respectively. Sockets are interchangeable and are furnished with Morse tapers. Special shanks, as well as special sockets for any style of tool shank, can be furnished.

at the right in the left-hand illustration, can be used for underneath countersinking or other light operations. The heads and indexing mechanism are synchronized by means of air trips. The machine does not run on a predetermined cycle, but adjusts itself to the work automatically. It will run full automatically, or it can be provided with a control valve which the operator can trip for each machine cycle. The machine can be operated up to 1800 cycles per hour.

The indexing mechanism in the base of the machine may be seen in the left-hand illustration, which shows the set-up for drilling and double countersinking the cross hole in the head of a cap screw. The other machine is arranged for drilling, counterboring and tapping steel wedge nuts. The vertical head is equipped with a milling attachment for milling the teeth in the sides of the nut. Production is at the rate of six pieces a minute, but with the milling operation eliminated, output increases automatically to 12 pieces per minute. It is pointed out by the makers that for work within its capacity, the range of this machine is practically unlimited. Several operations, such as drilling, counterboring, facing and tapping can be done on one hole, or several holes can be drilled, reamed, etc., at various angles. Moreover, multi-spindle auxiliary drilling heads can be used if desirable.

The circular tables or beds are made in two diameters, 52 and 72 in. Openings around the center permit chips to drop through into a pan in the cabinet base from which they may be removed conveniently through an opening at the rear.

Automatic Multiple-Spindle Drilling Machines

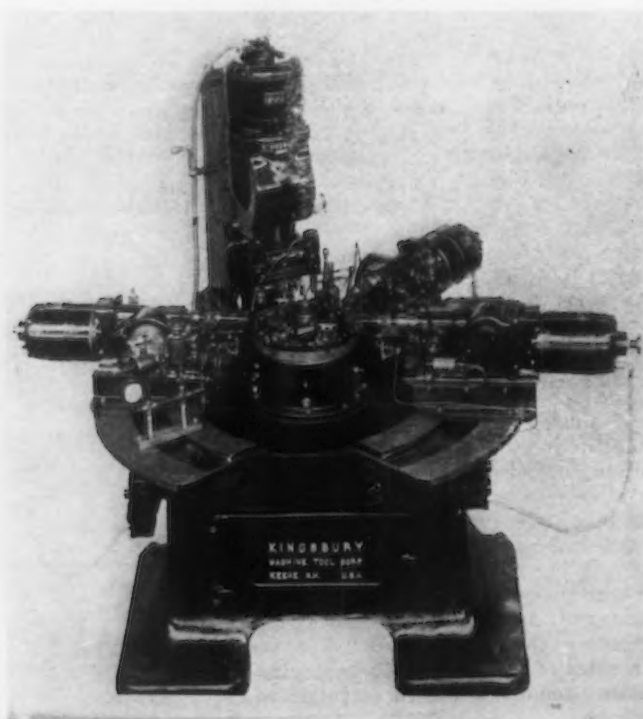
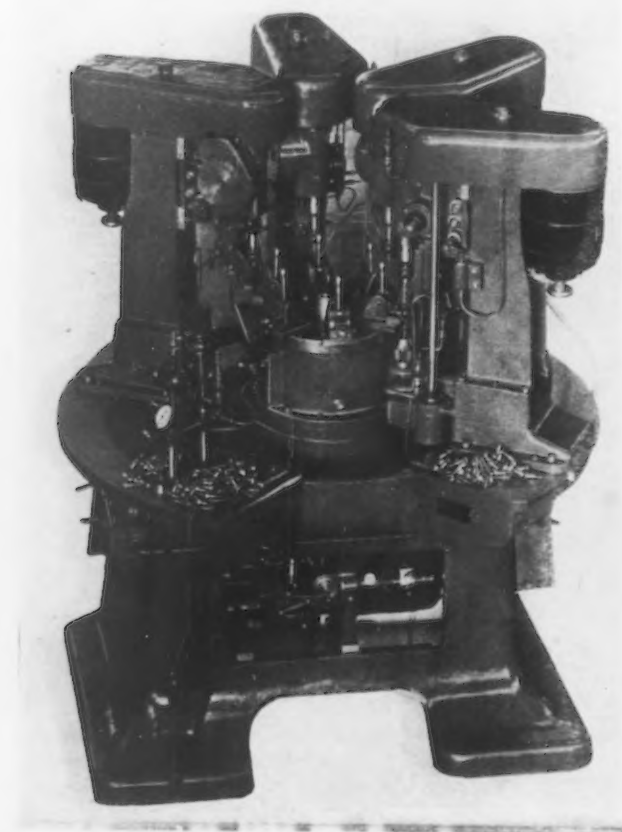
WIDE range and rapid production are features of the circular-type multiple-spindle drilling and tapping machines illustrated, which were built recently by the Kingsbury Machine Tool Corporation, Keene, N. H. Although made to special requirements, the machines employ the company's standard drilling heads with built-in motor and self-contained automatic feed, previously described in *THE IRON AGE*.

A new feature is the automatic indexing fixture at the center of the machine. The body of this fixture, which is designated as the No. 119, is 12 in. in diameter. The work dial or table is secured to the top of a vertical shaft that is mounted on Timken roller bearings. Inside the frame casting are Geneva wheels and an automatically-controlled plunger that

engages bushings for accurately positioning the table after indexing. The fixture is operated from a gear box, mounted in the base of the machine and connected thereto with a shaft and universal joints. The drive is direct from a built-in $\frac{1}{2}$ -hp. motor through a cone clutch and worm gearing. This unit is controlled from an air-operated tripping device, which, when released, permits the vertical drive-shaft to make one revolution and then stop. An adjustable friction drive is provided so that the clutch will slip under excessive load.

Around the fixture, which can be furnished with either six or eight stations, Kingsbury drilling and tapping heads up to $\frac{3}{8}$ -in. capacity can be mounted horizontally, vertically or at any angle between. The company's automatic burring spindle unit, shown

The Automatic Indexing Fixture at the Center Is a Feature. The machine at the left is set up for drilling and double counter-sinking the cross hole in the head of a cap screw. Steel wedge nuts are drilled, counterbored and tapped on the machine at the right



High-Production Milling Machine

Hardened and Ground Table Ways, New Type Gib Construction and Special Feedscrew Are Features

FOR high-production work and for small-lot plain milling necessitating high accuracy and heavy cuts, the Walcott Machine Co., Jackson, Mich., is offering the De Vlieg Supermil milling machine here shown.

Features include hardened and ground tool steel table ways, which, with a new type of gib construction and automatic lubrication, are said to provide continued true plane of travel for the work. A large alloy steel feedscrew with special form of thread, hardened, ground and lapped, combined with a device for eliminating backlash, makes possible feeding of the work with and against the cutter, obtaining uniform thickness of chip per tooth, and permitting use of climb cutting as a regular method for all types of work within the range of the machine. Timken bearings, large chip pan and coolant system, truss overarm, flange motor drive, ground tooth gears, splined shafts, and rigid construction throughout are other features.

The main frame of the machine is in three sections, which are fastened together by 24 heavy nickel steel bolts shrunk into place. The separate sections are: The pan that forms the

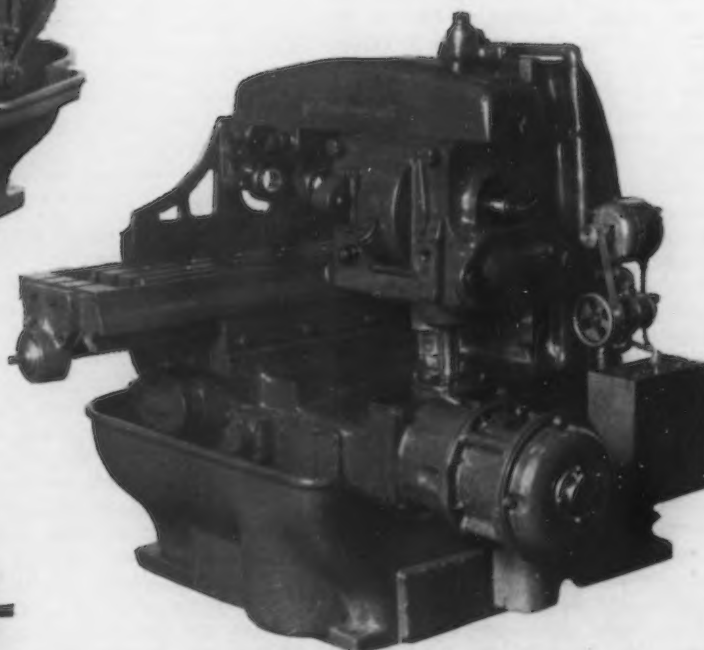
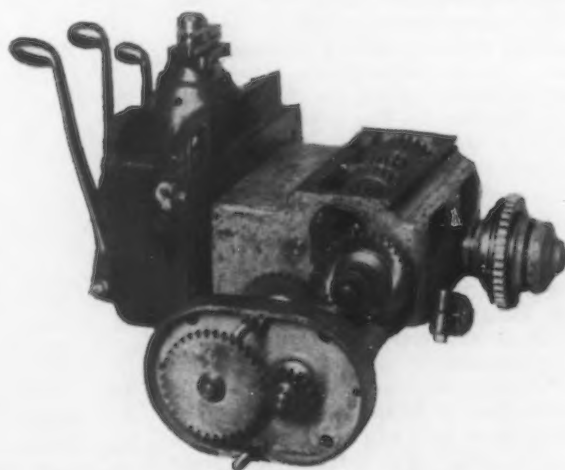
base, chip pan and coolant compartment; the bed, which carries the table ways and housing; and the column and the spindle head mounting.

The table is a heavy ribbed casting 6 in. deep. The ways, of vee and flat type, work in conjunction with an interlocking rigid square gib, front and rear, each gib being bolted in position with the heel resting on laminated shims which provide adjustment for wear. The vee way is in the rear toward the column and the flat way in the front. The hardened tool steel ways are ground in position. Both the hardened ways and the gibs are oiled automatically under pressure from the central circulating system. The advantage of this construction is a continuous true plane of travel for the table and provision for handling a lifting tendency as well as the normal down pressure.

Tool Steel Table Ways and New Gib Construction of the "Supermil" Provide True Plane of Travel for the Work. Control mechanisms are in the sectional unit shown at the right

A flange type motor using standard 10-hp. rotor and stator and special end plates is standard construction. The motor shaft carries a pinion which meshes with the main gear of the main drive bracket unit. Both the pinion and gear are hardened and have ground teeth. The main drive unit also comprises a multiple-plate disk clutch for starting and stopping the main spindle, bevel gears for transferring the drive to the vertical shaft, a pinion for driving the feed and rapid traverse mechanism and the drive for the lubricating pump. The unit is self-contained, enters the bed from the bottom and is mounted on a plate bolted to the bottom face of the bed. This construction provides convenient means for alinement with the spindle head. The entire unit is on Timken bearings and lubricated with a shower of oil.

The spindle is a hardened alloy steel forging and is ground all over. The nose is in accordance with the standard adopted by the National Machine Tool Builders Association. The spindle is carried on Timken bearings in a 7-in. diameter hardened and ground



Drive Arrangement Is Shown in the Rear View at the Right and the Special Feed Screw and Mounting, below. The main drive unit is self-contained



forged steel quill which provides 2-in. endwise adjustment. Extreme accuracy in this adjustment is effected by a worm mechanism supported endwise by the main casting, adjacent to the rack section of the quill. The spindle head casting is of box construction and has a long slide on the column projecting well above and below the spindle center line.

In addition to the spindle the head casting houses the spindle change gear mechanism. The drive is from a vertical shaft extending from the main drive bracket in the base. This shaft runs at a constant high speed and, through a pair of reduction bevel gears, drives the first pickoff gear shaft. The pickoff gears are mounted on splines and are locked into position. Spindle speeds from 20 to 180 r.p.m. are obtainable in the standard machine, but higher speeds are possible with special ratios. The second pickoff gear shaft is integral with a long pinion meshing with the main spindle gear, which is secured to the spindle by a taper hardened key. This gear is sufficiently heavy to function as a flywheel; it is hardened and the teeth are ground. The mating pinion is long so that the spindle gear, in sliding endwise with the spindle adjustment, will have proper tooth contact for the full 2 in. of adjustment. The ground teeth of these gears minimize backlash in the spindle drive. All shafts are mounted on anti-friction bearings and are submerged in oil. The vertical slide is of vee and flat construction with an interlocking gib, front and rear, designed so that clamping two screws in the front gib locks the spindle head in position and corrects misalignment.

Alinement of the overarm, which is of truss construction, is obtained by a vee section in the center supported by narrow flats at the extreme edges.

The feed, rapid traverse and their control mechanism is built into a sectional unit, as shown in the illustration. Power feed ranging from 1.8 to 21 in. per min. in either direction, and power rapid traverse of 180 in. per min. in either direction are provided. The feed and power traverse functions are divided, the rapid traverse connecting direct into the table screw gear through slow-speed positive-jaw clutches. This section is protected by a multiple-disk slip clutch under spring tension that will slip should the operator run the table into an obstruction. A take-off from this unit provides the power for the feed. The latter unit embodies the necessary reduction gears and means for changing the ratios through pickoff gears adjacent to the final drive. A second yielding device, having ratchet teeth under a heavy spring pressure, is designed to yield and sound a warning when the table screw delivers an excessive load. This unit carries the control mechanism for the entire machine, the spindle starting and stopping lever and the feed and rapid traverse levers.

The rapid traverse is operative when the spindle is running or

stopped, but the feed can be engaged only when the spindle is in motion. Both levers are interlocked. Interlocks are also provided between the feed and the starting levers. A spring loading device engages the reverse rapid traverse automatically at the end of the feed stroke in either direction. By the selection of proper trip dogs the machine can be made to operate automatically or otherwise.

The feed screw, a departure from the conventional design, is 2 in. in diameter and has a 5/16-in. bearing on each side. It is made of oil-hardened high-carbon alloy steel, hardened and ground all over and lapped in the

threads, which are of special form. The bronze nut provides large wearing area and is lubricated automatically under pressure. The feed screw is connected to the table by a heavy bracket which is bolted on the end of the table. Thrusts are taken on a self-aligning roller thrust bearing having a capacity of 15 tons. The table is 16 in. wide and is furnished with varying lengths of feeds, namely, 24, 30, 36 and 42 in. The spindle may be adjusted vertically from 2 in. to 14 in. from the center of the spindle to the top of the table, this adjustment being made by a hand-operated screw having a micrometer dial.

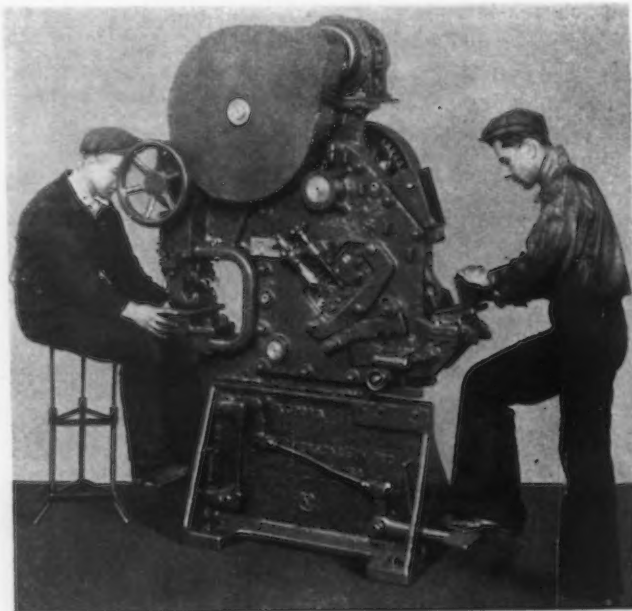
Shear, Punch and Coper for Small Sections

PUNCHING, plate and bar shearing, angle and tee cutting, angle and tee mitering, coping and notching can be done on the small combination machine illustrated, which is being added to the line of Joseph T. Ryerson & Son, Inc., Sixteenth and Rockwell Streets, Chicago.

The punch has a deep throat and is capable of handling most varieties

plates of any usual width or length.

Built into the shear end of the machine is the coping device, which extends out from the frame and is at a convenient height for operation. With this feature no time is lost in making special set-ups for this class of work. The regular coping device is of V-notch type, but the square notch type can be furnished. Change from one



Punching, Shearing, Angle and Tee Cutting, Mitering, Coping and Notching Can Be Done on the One Machine

of small structural shapes within its stipulated capacity. Operation of the punch is not interfered with by the other units of the machine. The shearing end is arranged so that a single slide handles bar cutting, plate and angle shearing, and coping. The angle shear attachment handles both inside and outside miter cutting, as well as straight shearing, and the blades in this unit are made in sections to facilitate replacement. The bar cutters, consisting of two blades only and located directly below the angle shear blades, handle both round and square sections. Below the bar cutter are the plate shearing blades, which will handle 3/8-in. and smaller

type to the other can be made conveniently.

The drive of the machine is through steel gears to alloy steel eccentric shafts. Clutches are of the two-jaw type, which permits engaging the clutch every half revolution of the clutch gear. The main frame of the machine is a one-piece alloy-steel casting, extending from the feet up to the motor shelf. Bearings are bronze bushed and ample lubricating facilities are provided. The working heights of the various units of the machine are such that the base of the machine can be placed directly on the floor. This arrangement also makes the machine portable.

Higher Tariffs Asked on Steel

John A. Topping, Representing American Iron and Steel Institute, Appeals for General Upward Revision—Pig Iron Producers Want Protection of \$3 a Ton

WASHINGTON, Jan. 15.—General revision of the metal schedule of the Fordney-McCumber tariff act was asked of the House Committee on Ways and Means by John A. Topping, chairman of the Republic Iron & Steel Co., and vice-president of the American Iron and Steel Institute, who was the first of 130 listed witnesses, when a three-day hearing on that schedule was begun yesterday.

Mr. Topping told the committee that some of the revisions might be downward, and others upward, and were sought to meet conditions that have developed since the present law was enacted. His testimony was of a general character. Mr. Topping explained that the industry had not had time to present a detailed schedule but would do so and submit it to the committee. An outstanding feature of his testimony was the request that ad valorem rates be placed on domestic wholesale prices, known as the American valuation plan.

Changes throughout the schedule also were asked by the other witnesses. Merchant pig iron makers asked that the present duty of \$1.125 per ton be increased to \$3. Higher rates were asked on tungsten and molybdenum ores and steels. Domestic manganese ore producers asked for a duty of 1.5c. per lb. on the manganese content as against the present duty of 1c. per lb. A duty of 1c. per lb. on bar iron and reinforcing bars was asked by a Texas maker. Changes in classification for alloy sheets, plates, etc., were asked. Wire rope makers requested an increase to 50 per cent, as compared with the present duty of 35 per cent, and higher duties also were asked for woven wire cloth. Importers said that either present duties on certain products be left unchanged or reduced. George E. Dix, New York importer, asked for maintenance of present duties on all rolled and finished steel.

The entire committee sat during the hearings of yesterday and today and showed much interest, as indicated by questions asked.

Asks Readjustment of Entire Metal Schedule

In asking readjustment of the entire metal schedule Mr. Topping said specific rates should be provided wherever possible with ad valorem rates based on wholesale prices at ports of entry, the latter involving the American valuation basis. At present

ad valorem rates are based on foreign valuation.

The iron and steel industry, he pointed out, has been making a net return of only about 5 per cent on its invested capital during the past few years. Mr. Topping said that it seeks duties which will provide for reasonable profits with ability to maintain the present scale of wages. Replying to a question by Representative Hull, Democrat of Tennessee, Mr. Topping declared that the industry considers that it should be able to make a profit of 10 per cent when allowance for reserve, overhead and related items are taken into account. At present, he said the iron and steel market is active, prices are low, and the margin of profit is narrow. A letup in demand, it was stated, would further affect prices and reduce or eliminate profits altogether.

Foreign competition was said to be keen and was attributed to ability of manufacturers abroad to produce at low costs owing to wages paid, which are much less than those paid by the American iron and steel industry. He estimated that generally steel from abroad is laid down at the seaboard at \$9 a ton under American prices. He spoke particularly of keen competition in such lines as bars, shapes and band steel. Wages in the American industry, Mr. Topping said, have doubled since 1914 and the cost of living has increased 60 per cent. Foreign labor cost was estimated at one-half to one-third of wages paid in the domestic industry. He disagreed with Representative Hull, who suggested that the tariff was a tax. Rather, it was Mr. Topping's view that it was a means of protection designed to cover the differences in costs abroad and in the United States.

Surplus capacity built up during the war was said to have left the industry with a capacity about 20 per cent in excess of demand, making competition sharp and holding down profits. Mr. Topping said that never during the many years he has been associated with the iron and steel industry has it made a fair profit when compared with profits in other lines, which he set forth in his brief. Some of the export markets, Mr. Topping said, have been lost because of foreign competition, and the South American trade was said to have been largely taken by foreign producers. One difficulty in preparing a detailed brief, Mr. Topping said, has been the inability

to get costs from abroad. Also, he said, costs in the United States vary considerably.

Mr. Hull suggested that Mr. Topping had pictured a gloomy future for the industry. Mr. Topping replied that he had not, but that it should be given adequate protection. He said that the country will continue to grow and absorb the present surplus capacity. The belief in some quarters that the iron and steel industry, being no longer an infant industry, is well able to take care of itself and is no longer in need of protection, was held largely responsible by Mr. Topping for reduction in duties under the Fordney-McCumber act of the base rate on iron and steel products from 3/10c. to 2/10c. per lb. or about 33 1/3 per cent and also responsible for the increased duty on imported raw materials and supplies, which, he stated, added approximately \$24,000,000 annually to iron and steel costs. High costs of production of iron and steel in the United States, said Mr. Topping, were due largely to wages, transportation and taxes, the latter including State taxes, such as those applying on iron ore.

Duty of \$3 Suggested for Pig Iron

Request for an increase in the duty on pig iron to \$3 per ton from the present rate of \$1.125 was asked by representatives of merchant blast furnace interests. The Woodward Iron Co., Woodward, Ala., and a furnace interest in Tennessee, however, in telegrams to John W. Logan, Alan Wood Iron & Steel Co., Philadelphia, who appeared on behalf of makers in Massachusetts, New York, New Jersey, Pennsylvania, Virginia, Alabama and Utah, asked for a rate of \$4 per ton. Mr. Logan told the committee that the present duty is not enough to meet foreign competition. Decreased imports were ascribed by him to the countervailing duty against imports from India and the recently revoked anti-dumping order against German imports rather to the normal duty which was increased from 75c. under the flexible provision of the tariff act. Mr. Logan explained to the committee the difference in pig iron and iron in pigs and declared that out of the total production in the United States in 1927 of 36,000,000 tons of "pig iron," 23,000,000 or 64 per cent was used as molten iron. About 4,000,000 tons, or 11 per cent, was iron cast in pigs by producers, not for sale but

for subsequent remelting by themselves. The amount made for sale, "iron in pigs" or merchant iron, was 9,000,000 tons or 25 per cent. This explanation was made because importations of "iron in pigs" compete only with the 9,000,000 tons and it was stated that unfair comparisons have been made in the past by measuring the volume of imports against the total production of pig iron.

"The failure of Congress to give us proper protection in 1922 resulted in foreign competition of so serious a character as to cause grave losses of working hours and wages to our employees, as well as direct commercial losses to our companies," said Mr. Logan. "Merely to survive, we have been compelled to leave untried no method that promised to help protect our industry. We have appealed to the Tariff Commission, obtaining all the relief it is possible under the flexible provisions of the tariff act. We have invoked the countervailing duty and the anti-dumping act.

"We contend that we are entitled to a protective duty adequate in itself, and that we should not be compelled to resort to countervailing, anti-dumping or other means of defense of our business.

"In asking you to make the import duty on 'iron in pigs' \$3 per ton, we are asking only for a fair and just rate and one which is necessary for the protection of our workmen and stockholders, as well as the workmen and stockholders of other contributory industries."

Testimony of a similar character to that of Mr. Logan was given by Ralph W. Sweetser, American Rolling Mill Co., appearing for furnace interests in southern Ohio, Kentucky, and West Virginia; H. M. Waybright, Mystic Iron Works, Everett, Mass.; Percival Johnson, Pulaski Iron Co., Pulaski, Va., and F. B. Richards, Hanna Furnace Co., Cleveland.

Higher Tungsten and Molybdenum Duties Requested

John J. Sullivan, John J. Sullivan Co., New York, importer of high-speed steel scrap, asked that the present duty of 75c. per ton on tungsten scrap steel be maintained, holding that it is adequate. He claimed imports should be encouraged in view of what he said was a scarcity of tungsten ore deposits in the United States. The duty of 75c. under the paragraph covering all kinds of scrap was upheld by the Court of Customs Appeals in Washington after the Customs Court in New York had declared tungsten steel scrap was dutiable at the rate of 60c. per lb. of tungsten content and 25 per cent ad valorem. The Collector of the Port at New York had classified the material as steel scrap with a tungsten content of about 18 per cent and dutiable at 75c.

Nelson Franklin, representing domestic producers of tungsten and molybdenum, asked that this inequality be corrected and that paragraph 301 be changed to impose the proper

duty on tungsten steel scrap. He asked for a clause providing an additional duty of \$1 per lb. on the tungsten content in excess of one-tenth of 1 per cent and 65c. per lb. on the molybdenum content in excess of one-tenth of 1 per cent. He also asked an increase of 50 per cent to 67.5c. per lb. from the present duty of 45.5c. per lb. metallic content on tungsten ore and also a duty of 90c. per lb. and 25 per cent ad valorem on tungsten alloys, metallic content, now taking a duty of 60c. per lb. and 25 per cent ad valorem. He further asked for increased rates on molybdenum ore and its products. The rates sought were 35c. per lb. on the ore content, 50c. per lb. on ferromolybdenum, and 65c. per lb. on molybdenum steel. He said that the industry cannot operate at present owing to imports. Clifton Taylor, Molybdenum Corporation of America, Pittsburgh, asked that tungsten steel scrap imports be given a duty based on its tungsten content.

Manganese Ore Producers Want Greater Protection

An increase to 1.5c. per lb. on manganese content from 1c. per lb. was asked for manganese ore by domestic producers. Their principal case was presented by J. Carson Adkerson, president of the American Manganese Producers' Association, Washington. He also asked that duties on a sliding scale be placed on iron manganese ores with less than 30 per cent manganese. He submitted figures showing that during the past year the domestic manganese industry has produced high-grade ore carrying manganese content sufficient to meet the production of 3,000,000 tons of finished steel. This production was said to represent one-fifteenth of the total requirements of the steel industry. Mr. Adkerson read a statement to show the occurrence of millions of tons of low-grade manganese ore which, through leaching, flotation, roasting, magnetic separation or other known suitable forms of treatment, are yielding and can be made to yield a high-grade product. He declared that substantial capital is now invested in the industry and that preparations have been made for greatly increased production.

He said that the manganese industry asked the same protection as given the zinc and lead industries. It was pointed out that a duty of 1.5c. per lb. is provided under the present law for the metallic content of lead and zinc ores, and that similar treatment should be given manganese ore. Supporting Mr. Adkerson, evidence was given by Harold A. Pimpelly, Domestic Manganese & Development Co., Butte, Mont., and E. A. Fritzburg, United States Manganese Co., Staunton, Va. They described at some length work of beneficiation being done to develop the domestic industry, related figures showing capital invested, and other data, to prove that the industry, if amply protected, can be built up to

supply domestic requirements for making ferromanganese.

Reinforcing Steel Duty of \$20 a Ton Proposed by Manufacturer

A duty of 1c. per lb. on bar iron reinforcing bars was asked by George W. Armstrong, Texas Steel Co., Fort Worth, Tex., which manufactures these products. He said that reinforcing bars under a Customs Court decision had been classified with structural shapes as given a duty of \$4 per ton. Costs in this country made it impossible for the small producer to compete successfully with foreign bars, it was stated. Various members of the committee in their questions indicated that the proposed increase in duty to \$20 per ton would be unreasonable. But Mr. Armstrong said it was the duty of Congress to equalize costs here and abroad.

Opposition to any increase in duties on all rolled and finished steel products was expressed by George E. Dix, importer, New York. He also specifically opposed any increase in the duty on interlocking sheet piling, which he imports from Germany. The latter product, under a Customs Court decision, was classified with structural shapes, taking a duty of \$4 per ton. In his contention for no increase in duties on iron and steel products, Mr. Dix pointed to what he said were relatively small importations when compared with domestic production and earnings of domestic steel companies. He said that if imports were curtailed domestic prices would be increased. Mr. Dix insisted, in connection with his contention for no change in the duty on interlocking sheet piling, that the domestic product does not meet the specifications of the German product.

Increase Sought on Tool Steels

Increased duties on tool and fine steels was asked by Dr. John A. Mathews, Crucible Steel Co. of America, New York, who appeared for 24 producers in this country. He said that the domestic industry requires added protection from the foreign products. The domestic industry, he said, produces only about one-half of 1 per cent of all the steel made in the United States and that imports are about 15 per cent of the production of the domestic fine steel production. The domestic industry making tool and fine steel now is operating at about 60 per cent of capacity. Exports were said to be negligible. Investment in the tool and fine steel industry was declared to amount to five to eight times of that invested in the tonnage industry, when calculated on a tonnage basis.

A duty of 45 per cent on band steel was asked by William D. Disston, Henry Disston & Sons, Philadelphia. He insisted that this was necessary if domestic producers are to compete successfully with foreign makers. He said also that competition in the saw industry is keen.

Separation of alloy sheets, plates, etc., into a distinct paragraph was asked by J. R. Boker, H. Boker & Co., Inc., New York, importers. The present duty under the sheet and plate paragraph is 30 per cent, which was said to be too high because the material which he imported, Mr. Boker said, does not compete with domestic products.

Tin Plate Makers Seek No Change

No change in the present duty of 1c. per lb. on tin plate is sought by the domestic tin plate makers, E. R. Crawford, of the Association of Tin Plate Manufacturers, told the committee. Mr. Crawford, president McKeesport Tin Plate Co., said that the domestic industry is getting along satisfactorily and is well satisfied with the present duty. But in replying to a

question he said that it would be dangerous to lower the duty because the industry along the Atlantic seaboard would then be open to keen competition. Mr. Crawford, who spoke for independent manufacturers, estimated that \$300,000,000 is invested in the tin plate industry in the United States.

An increase to 50 per cent from the present duty of 35 per cent was asked for wire rope by W. P. Bowman, John A. Roebling's Sons Co., Trenton, N. J. No increase was asked of the existing duty of 35 per cent on insulated wire. Mr. Bowman said importations of wire rope had increased 3000 per cent and that they affect the prices of the 14 manufacturers in the United States. He appeared for most of the producers and said that 80 per cent of them had informed him that they would like to have the increase in duty sought.

Slightly higher duties should be placed on alloy sheets, wire, etc., said Leon O. Hart, Driver-Harris Co., Harrison, N. J. He also asked for a slight change in the method of applying duties, and suggested a duty of 25 per cent on hot-rolled material with an additional 10 per cent cold-worked alloy steel. He also asked for a higher scale on finer sizes than in heavy sizes and requested that the duty of 25 per cent in the basket clause be increased to 30 per cent.

David H. Miller, Georgetown, Conn., representing wire netting manufacturers, asked for specific and higher rates on this product. John D. Watson, the Wire Cloth Manufacturers' Association, asked for duties ranging from 45 per cent to 75 per cent, as against present duties of 25, 35 and 45 per cent, depending on the mesh.

Foreign Competition Carefully Analyzed

Tariff Commission Prepares for Ways and Means Committee Exhaustive Report on Imports Under Fordney-McCumber Act

WASHINGTON, Jan. 15.—Tariff legislation probably was never considered with as great preliminary preparation and systemization as the program now under way before the House Committee on Ways and Means. The hearings were begun on Jan. 7 and will be completed, according to the present arrangement, on Feb. 25, and will cover the existing act in its entirety. So far, except for infrequent delays, the hearings have moved with rapidity and thoroughness, owing partially to the coordinating of time allotted for witnesses, under which the policy has been followed of having only one witness appear for a group of interests whose pleas are identical.

The committee has been well prepared in advance for conducting hearings on the various schedules as the result of the extremely exhaustive report made to it by the Tariff Commission. This report covers every item and every administrative section of the Fordney-McCumber act. The metal schedule, one of the largest in the tariff law, embracing some 300 items, has like others been analyzed carefully and included in the entire report, copies of which members of the committee keep before them to assist them to conduct the hearings and get a clear understanding of the evidence presented.

The analysis of the metal schedule, prepared by the Metals Section, Tariff Commission, in charge of F. M. Leonard, chief of the section, goes extensively into each paragraph, giving such data as domestic and foreign production, costs, description of processes of manufacture, competitive conditions, action taken in changing duties under the flexible provisions, investigations under way, ratios of im-

ports to domestic output and related information. This material, at the request of the committee, was assembled and printed within about one month, despite its great volume and wide character.

Pig Iron Import Situation Reviewed

Dealing with imports of pig iron, the summary pointed out that during the period 1909-1922 they were relatively small, but from 1922 to 1926 a marked expansion took place. In 1926 importations attained a ratio of 1.15 per cent of total domestic production, and a ratio of 4.80 per cent of the quantity made for sale. In 1927, the report stated, there was a decided decline in imports. On March 25, 1927, the duty on pig iron was increased by 50 per cent through Presidential proclamation to \$1.125 per ton. During the first quarter of that year, when the duty was 75c. a ton, imports were 21,235 tons, while for the remaining nine months, with the new and higher duty applicable, imports totaled 111,333 tons. In 1928 incoming shipments declined further, dropping to 104,827 tons. Imports consist mostly of foundry, malleable and low-phosphorus grades.

On account of the cost of the rail haul, the commission report said, imports are practically all consumed within about 200 miles of the sea coast. Basing its figures on the commission's investigation regarding pig iron cost, the report showed that in 1924 the amounts by which domestic delivered cost exceeded foreign delivered costs were \$7.77 in the Eastern district, and \$7.07 in the Buffalo district, when compared with the cost of iron from British India. The merchant producer, it was stated, gener-

ally with a somewhat higher cost of production, must face competition both from the domestic steel works blast furnaces and from imports of pig iron. It was pointed out that merchant blast furnace manufacturers in eastern Pennsylvania, New Jersey, New York and Virginia must bear the brunt of this competition and that many of them have been forced to discontinue operations. Blast furnace equipment in foreign countries, such as British India, Germany and the Netherlands, it was stated, is in some instances fully equal to that of American manufacturers and only the most efficient types of domestic furnaces were said to be active.

Pig iron, it was explained, can be shipped to the Atlantic seaboard at a cost for transportation of about \$3 per ton from European ports, and \$5 per ton from British Indian ports, while rates from European ports to the Pacific coast are about \$4 per ton.

Domestic production of spiegeleisen in 1927 was placed at 100,000 gross tons, most of it for sale. The imported material was said to compete with the domestic alloy near the ports of importation, when the imported product has an advantage in transportation costs.

Domestic Mines Furnish Only Fraction of Manganese Required

With the exception of the war years, the report said, domestic mines have furnished only a small fraction of American manganese requirements. Montana was credited with being the chief domestic producing locality. The greatest output of domestic high-grade manganese ore was the war year of 1918 with 305,869 tons. In 1927 the total was 43,600 tons. Pre-

liminary reports, the commission said, indicate a substantial increase in 1928. The commission has conducted, under its general powers, an investigation of manganese ore. The information obtained includes cost of production data respecting most of the operating mines in the United States. The data are not yet ready for publication. Owing to favorable natural conditions, the report stated, one-half to two-thirds of the world's supply of manganese is furnished by the Gold Coast of West Africa and British India at relatively low cost.

"Fresh discoveries have tended to increase domestic productive ability, but unless further discoveries are made the prospect for a larger domestic industry rests mainly upon the application of modern methods to the utilization of large resources in the form of low and medium grade ores," the report said. "Practical tests of certain new processes of beneficiation which are being made in Montana, Virginia and other States might result in materially expanding the proportion of domestic requirements derived from American mines."

Molybdenum Market Carefully Cultivated

The use of molybdenum ore in the United States is declared to be largely due to the efforts of its two major producing companies in conducting campaigns of research and market development. Australia, Norway and Canada produce in the aggregate less ore than the United States, the report said, and their product supplies the demand of other countries.

Domestic production of tungsten, confined chiefly to Colorado, Nevada, California and South Dakota, is low grade material, the report said, the ores of 1927 averaging less than 1.5 per cent tungstic acid. The chief producers are China and Burma. The commission has in progress an investigation concerning tungsten, but the cost data are not yet tabulated in a form for publication.

At the present time, the report declared, three producers make virtually all the domestic output of ferromanganese. Until 1925, it was stated, Great Britain was the principal foreign producer of iron manganese alloys, most of the exports being high grade ferromanganese. Since 1925 exports of iron manganese alloys from Great Britain have declined greatly. Canada and Norway have since 1924 become important in the production and exportation of ferromanganese.

Molybdenum has only recently been made available on an extensive commercial scale, the report stated, and "even now the market must be carefully cultivated, and new forms of use are constantly being investigated by the research and sales staffs of the two principal American companies." The production of ferrotungsten, according to the report, probably absorbs over 90 per cent of all tungsten used in the United States. The bulk of production is at Niagara Falls, N. Y., while tungsten metal is pro-

duced largely in Ohio. The ratio of imports of metallic tungsten, ferrotungsten and other tungsten alloys and compounds to domestic production declined from 24.22 per cent in 1925 to 0.76 per cent in 1927. Imports are chiefly from the United Kingdom and Germany. The commission, in connection with its investigation under the flexible provision, has obtained cost of production and other data respecting competitive conditions in the tungsten industry. These data have not yet been summarized for publication.

The principal demand for ferrochrome, the report said, is for the 4 to 6 per cent carbon grade. The grade with a 1 to 2 per cent carbon content is next in importance, constituting about 20 per cent of the total consumption used in stainless steels and case hardening steels. The report said that there is an increasing consumption of very low carbon ferrochrome and that it is now possible to produce in the electric furnace an alloy containing less than 0.1 per cent of carbon, though at a considerable cost. The greater part of domestic production of chromium, rising from about 5000 or 10,000 tons prior to 1915 to perhaps 50,000 tons, comes from one company, the bulk being from Niagara Falls and West Virginia. Imports now amount to less than 10 per cent of domestic consumption.

Steel Bars Encounter Foreign Competition

The chief material competing with the American bar iron industry was said to be mild steel bars, largely of domestic make. The importation of Swedish charcoal bar iron, it was said, may be considered as supplementary, as such bar iron is of higher quality than iron generally produced in quantity in the United States.

Domestic steel bars, it was pointed out, encounter foreign competition from similar products in the seaboard markets. Competition in the steel commodities less advanced than bars, which are enumerated in the paragraph on steel ingots, blooms, slabs, etc., was said not to be pronounced. Under the act of 1922, it was stated, there has been an increased importation of the low-priced steel products, whereas under former acts imports were largely of high-priced specialties. The report showed that there is considerable foreign competition in special grades of alloy steels, such as high-speed tool steel bars, which contain about 18 per cent tungsten. Increased importation of alloy steel bars has been coincident with increased domestic demand, but domestic output was declared to be increasing more rapidly than importation. The ratio of imports to domestic production of alloy steel is less than 1 per cent. The higher priced imported alloy tool steels are marketed further inland in the United States than lower grade steel. English and Swedish alloy steels, it was stated, are sold to a considerable extent in the United States markets on the basis of their prestige.

Imports in 1927 of plates, not thinner than 109/1000-in., and skelp sheared or rolled in grooves, valued at over 1c. and not over 3c. per lb., represented more than 99 per cent of the incoming shipments of these items as listed in the plate and skelp paragraph, and were small. In 1925, the report said, about 49 per cent of the total domestic output of boiler and other plate was produced in Pennsylvania; 15 per cent was produced in Ohio; 24 per cent in Illinois and Indiana; 10 per cent in Delaware, Maryland, New Jersey, New York and West Virginia and 2 per cent in Alabama, California, Missouri and Washington. Imports of sheets, it was stated, although increasing recently, have been very small when compared with domestic production. The ratio of imports to domestic production of tin plate, it was stated, fell from 9.51 per cent in 1910 to 0.65 per cent in 1926, while domestic consumption more than doubled during the same period. In the home market, it was declared, the domestic tin plate industry today experiences little competition from abroad.

Structural Shapes Lead in Imports

Imports of structural shapes were not significant prior to 1923, the report said, but since that year there has been a rapid and continuous expansion of the import trade, reaching a maximum in 1927, when they amounted to 5 per cent of domestic consumption and were greater than for any other rolling mill product. Imports come largely from Luxembourg and Belgium. They are chiefly of the heavy non-fabricated grade and are used largely along the Atlantic coast, New York being the principal port of importation. Total imports of hoops, bands and cotton ties in 1927 equaled 3.6 per cent of domestic production, coming chiefly from Belgium and Germany. Exports were 2.4 times as great as imports. In 1927, the ratio of imports of wire rods to their production in the United States was 0.64 per cent. Imports came chiefly from Sweden and consisted of a high quality of wire rods for special uses. The United States, with its immense automobile industry, is the largest producer of ball and roller bearings and imports represent less than 1 per cent and exports slightly more than 1 per cent of domestic production.

Nearly all of the rails imported, the report said, are heavy railroad rails and 45 per cent of the total importations came from Belgium and 24 per cent from Germany during the period 1922-1927. The trend of exports of rails from the United States, it was stated, has been decidedly downward since 1919.

Imports of cast iron pipe, it was pointed out, were inconsiderable prior to 1923, but since then there has been a steady increase. In 1927, the ratio of imports to domestic production of comparable grades was 6.15 per cent, pressure pipe. Over 75 per cent of the imports originate in France.

Cast Iron Pipe Rates to Be Revised

Interstate Commerce Commission Issues Report Fixing Mileage Scale for Various Producing Districts

WASHINGTON, Jan. 15.—Differentials in rates on cast iron pipe from Lansdale and Quakertown, Pa., Florence, N. J., and Chattanooga, Tenn., as compared with rates from the Birmingham district were fixed in a mileage scale by the Interstate Commerce Commission in a decision announced last Wednesday. The scale, an extension of the Jones & Laughlin scale on iron and steel rates, is not intended as a measure of the readjusted cast iron pipe rates, but was adopted as a measure in arriving at differentials which should exist in the rates from the origins concerned. The commission did not enter an order, but stated that the railroads affected will be expected to publish rates within 90 days from the service of its report in accordance with its findings.

The decision involved a number of complaints, known as the Krupp Foundry Co. case. One finding held that rates on cast iron pipe and fittings in carloads from Lansdale and Quakertown to destinations in Maryland, Delaware, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, Georgia and Alabama were not unreasonable, but were unduly preferential to producers in the Birmingham district and at Chattanooga and Knoxville, Tenn. Rates from Florence to destinations east of the Mississippi River were held to be not unreasonable, but unduly preferential to producers at the southern points of origin named. Rates from Chattanooga to destinations east of the Mississippi and north of the Ohio and Potomac Rivers and to destinations in Kentucky, West Virginia, North and South Carolina, Maryland and the District of Columbia were held not to be unreasonable, but unduly preferential to producers at the other southern origins named. The scale extends to a distance of 1500 miles.

In the course of its decision the commission stated that about 2,000,000 tons of cast iron pipe is produced annually in the United States, of which about 75 per cent is pressure pipe. Of the total production, it was declared, about 60 per cent is produced in the South, about 27 per cent in the East, and about 13 per cent in central territory, while only 34 per cent is consumed in the South and West combined, 23 per cent in the East and 43 per cent in central territory. Demand in the East, it was pointed out, is reaching the point of saturation and the center of greatest demand is moving westward and southward with the center of population. Cities in central territory, according to the opinion, are growing rapidly and are laying large quantities of pipe, and that territory is the most important consuming section in the country.

Of the tonnage produced by South-

ern plants, it was declared, 19 per cent moves to Southern destinations, 31 per cent to Western destinations, 18 per cent to Eastern destinations and 30 per cent to central territory. Since 1885, many of the foundries in the Philadelphia district, the decision said, have been dismantled and the production has centered in the Birmingham district. During recent years, it was added, the tendency has been to concentrate production in fewer and larger foundries due to consolidation of interests and the development of the so-called centrifugal process. Under this readjustment, the commission said, the plants closed down in the North have exceeded those closed down in the South both in number and capacity.

Discussing trade conditions further, the commission declared:

New York Chemists to Discuss Electrons

A joint meeting of the New York section of the American Electrochemical Society, the American Chemical Society, the Society of Chemical Industry and the Société Chimie Industrielle, with the American Electrochemical Society in charge, will be held Friday evening, Feb. 1, in Rumford Hall in the Chemist Building, 52 East Forty-first Street, New York. Prof. Charles A. Kraus, Brown University, Providence, R. I., will deliver an address on "Electrons, Their Properties and Application from a Chemical Point of View." An informal dinner at \$1.75 per cover in the dining room of the Chemist Building will precede the lecture.

Committees Organized by Testing Society

A new standing committee has been organized by the American Society for Testing Materials to be known as A-10 on iron-chromium-nickel alloys. The executive committee decided to form this new committee after careful consideration of the best manner in which the society could promote knowledge of the properties of these alloys, and develop such methods and such tests, and ultimately such specifications, as may be warranted. Jerome Strauss, chief research engineer Vanadium Corporation of America, Bridgeville, Pa., has been designated as temporary chairman.

Another new committee, which was organized at a well attended meeting in Philadelphia on Dec. 11, is to be known as the research committee on fatigue of metals. Its function is defined broadly as follows: "To summarize and correlate the work that

"Of the plants which have continued in operation, the tonnage produced by the Northern and Southern plants represents about 90 and 75 per cent of their respective capacities. The output of the Southern plants has remained at about 60 per cent of the total production for the past four or five years. It has only been since 1924 that any considerable tonnage of cast iron pipe has been imported, the imports for that year having been 52,528 tons, and for 1926, 93,933 tons, or less than 5 per cent of the total consumption in the United States. East of the Mississippi there is actual or potential competition among all the producers, the principal markets being in central territory. The Chattanooga complainant ships about 30 per cent of its output to Eastern cities and about 65 per cent to destinations in central territory. Since 1885 the Philadelphia producers have not been able to market any of their commodity south of the Ohio and Potomac Rivers, but state that they will be able to do so with a proper rate adjustment."

various laboratories are doing in connection with the fatigue of metals and to study the relationship between fatigue failure and other strength properties of metals and their atomic and metallographic structure. There are 11 members of the committee, and Dr. H. F. Moore, past president of the society, was elected chairman.

Forced Lubrication

A compendium of forced lubrication devices has been issued in the December number of *Lubrication*—the monthly publication of the Texas Co., New York. Profusely illustrated, the paper takes up grease and pressure oil lubrication in succession, showing how various lubricating devices perform the functions allotted to them, and discusses in general the problems of various types of machinery and how they are met.

Synopsis of the subject matter shows that grease lubrication is taken up under two headings, by spring-actuated plunger and by power-actuated plunger. In the latter case, either compressed air, electric power or hand or foot-operated pump involving lever or screw action is employed as a source of power. Oil lubrication is covered under two headings: Mechanical operation and plunger operation. The former may be chain or shaft-driven geared pump, or mechanical force feed lubricator. Plunger operation is by either hand or foot power.

The Weirton Steel Co., Weirton, W. Va., is installing equipment at its sheet mills for the manufacture of long ternes and expects to be in production on them in time to make shipments on and after April 1.



Foundrymen Sponsor Cast Iron Research Project

The committee on cast iron of the American Foundrymen's Association has received from the board of directors an appropriation to conduct an investigation on the methods of measuring liquid shrinkage of cast metals. The work will be carried on at the United States Bureau of Standards, where a research fellowship has been established for the special purpose of working out these test methods.

The committee considers that the greatest need in the cast iron field is the development of methods whereby the physical properties of cast iron may be measured. While some of the properties may be measured at present, there are several for which no adequate test methods are available. This situation has led to considerable difficulty in determining what are good cast irons for the various classes of castings. After canvassing the situation, the committee considers it very important that the three related properties, fluidity, liquid shrinkage and solid contraction should be measurable.

Tests for solid contraction are available at present. The Bureau of Standards is working out tests to measure fluidity and the present project, that of formulating test methods to measure liquid shrinkage, should complete this group of tests.

H. Bornstein, chief chemist, Deere & Co., Moline, Ill., is chairman of the A. F. A. committee on cast iron, and J. T. MacKenzie, chief chemist, American Cast Iron Pipe Co., Birmingham, is chairman of the sub-committee on cast iron research, which will be the supervisory body of this research project.

Gray Iron Institute Expands

The Gray Iron Institute has taken larger office space in the Terminal Tower Building, Cleveland, according to an announcement of Arthur J. Tuscany, manager, who states that additional space is necessary because of increased activities in which the institute will engage. Committees are now being formed on research, costs, trade practice, statistics, and budgets and finance. Eleven new members have recently joined the organization.

The institute is holding a series of group meetings in various sections of the country at which representatives outline the work of the organization, and much interest in its activities is being shown by gray iron foundries in the various districts. Group meetings held the past few days include a dinner meeting at the Syracuse Hotel, Syracuse, N. Y., Jan. 8, sponsored by the Central New York Foundrymen's Association; a luncheon meeting of the gray iron foundrymen in the Chicago district, held at the Palmer House, Chicago, Jan. 11; a dinner meeting of Wisconsin foundrymen held at the Schroeder Hotel, Milwau-

kee, Jan. 14, and a dinner meeting of foundrymen in the St. Louis district held at the Claridge Hotel, St. Louis, Jan. 16, arranged for by the St. Louis Foundrymen's Club. Other meetings scheduled include a luncheon meeting Jan. 19 at the St. Nicholas Hotel, Decatur, Ill., arranged under the auspices of the Central Illinois Foundrymen's Association; a luncheon meeting of the Iowa foundrymen to be held at the Roosevelt Hotel, Cedar Rapids, Jan. 21; a dinner meeting of the foundrymen of Minneapolis and St. Paul and vicinity at the Minneapolis Athletic Club, Minneapolis, Jan. 22. Arrangements are also being made for a meeting in Kansas City, Mo.

Foundrymen Name Officers and Directors

At the meeting of the nominating committee of the American Foundrymen's Association, held at Cleveland last month, the following were nominated for officers and directors:

For president to serve for one year:

Fred Erb, president Erb-Joyce Foundry Co., Detroit.

For vice-president to serve for one year:

N. K. B. Patch, secretary Lumen Bearing Co., Buffalo.

For directors to serve three-year terms each:

Harold S. Falk, vice-president and works manager Falk Corporation, Milwaukee.

S. T. Johnston, vice-president, S. Obermayer Co., Chicago.

Frank J. Lanahan, president Fort Pitt Malleable Iron Co., Pittsburgh.

Arnold Lenz, manager Chevrolet Motor Co., Saginaw, Mich.

Delos H. Wray, vice-president Henry Wray & Son, Inc., Rochester, N. Y.

Formal election of officers and directors is announced at the annual convention of the association and the by-laws provide that officers and directors so selected shall assume office at the annual meeting of the board of directors held within 90 days of the closing date of the annual convention.

The annual convention this year is to be held at the Hotel Stevens, Chicago, April 8 to 12.

Power Exhibition with Engineering Congress

Chicago's power exhibition, to be held in the Coliseum, Feb. 12 to 16, as the fourth Mid-Western Engineering and Power Exposition, will be staged in about 325 booths in the two acres of exhibition space available. It is planned to group exhibits of the same class, so that quick and easy inspection within a group may be made. In addition to the exhibition, a program of technical papers has been planned, as mentioned in THE IRON AGE of Dec. 20, 1928, page 1587.

In addition to the papers at definite sessions, there will be a luncheon meeting addressed by W. L. Abbott, president of the conference, and another luncheon meeting at which R.

C. Allen, Westinghouse Electric & Mfg. Co., East Pittsburgh, will discuss "Developments in the Steam Turbine." This meeting will be under the auspices of the Western Society of Engineers. The conferences will be participated in by the American Institute of Electrical Engineers, American Institute of Mining and Metallurgical Engineers, American Society of Mechanical Engineers, National Safety Council, Western Society of Engineers, American Society of Safety Engineers, American Society of Refrigerating Engineers and American Society of Heating and Ventilating Engineers.

Testing Society to Meet at Atlantic City in June

Atlantic City, N. J., has again been chosen by the executive committee of the American Society for Testing Materials as the place for the 1929 annual meeting. Chalfonte-Haddon Hall is the hotel selected, and the dates are June 24 to 28.

Foundry Conference at Madison

Announcement is made by the department of mining and metallurgy and the extension division of the University of Wisconsin, Madison, Wis., of the third annual foundry conference to be held at the University Feb. 5 to 8. These conferences have been organized especially for foundry managers, superintendents, foremen, metallurgists and chemists, and for any persons actively engaged in or interested in foundry practice and its many problems, affording an opportunity for foundrymen to pursue short courses covering fundamental foundry practice and principles.

A session on apprenticeship in the foundry industry will be a feature this year. It will be under the leadership of C. J. Freund, apprentice supervisor of the Falk Corporation, Milwaukee.

The program for the meetings will follow more or less this plan: (1) Each discussion will open with a statement of the problem and the point to be determined; (2) The leader will offer an example of what he considers the outstanding difficulty, and give each of those present an opportunity to explain his own experience with the problem; (3) A discussion of the material thus brought out will follow, and the points made will be listed in concise form, weighed in accordance with their importance, and conclusions drawn to summarize the discussion.

The R. D. Nuttall Co., Pittsburgh, a subsidiary of the Westinghouse Electric & Mfg. Co., but long operated as separate unit, on Jan. 1 became an integral part of the parent company, designated as the Nuttall works. All kinds of gears and speed reduction units are produced at this plant.

Steel Specifications to Be Revised

Structural Steel, Alloy Steel Castings, Heat-Treated Forgings and Steel for Welding Under Discussion.

COMMITTEES of the American Society for Testing Materials that have charge of the various specifications for steel met in Philadelphia, Jan. 9, 10 and 11. Important discussions centered about the studies being made on structural steel grades indicating the need of revision of the specifications to represent more nearly the plain carbon steel now being manufactured for bridges and buildings.

Specifications for cast steel are also being scrutinized. A sub-committee has revamped the present specification for austenitic manganese steel castings. Agreement is also being sought for some means of specifying alloy steel castings containing smaller percentages of nickel, manganese, or some other metal. The present specification is used for carbon steel castings; it is generally agreed that a good alloy steel casting should give better properties than

| | |
|-------------------|-----------------------------|
| Ultimate strength |80,000 lb. per sq. in. |
| Yield point |50,000 lb. per sq. in. |
| Reduction in area |22 per cent |
| Elongation |40 per cent in 2 in. |

but so many alloys are being tried and the foundry and heat treatment practice is in such a state of development that further agreement for a general specification has not yet been reached.

A committee that has developed specifications for steel for hammer welding took steps to enlarge its personnel with representatives of users of large quantities of steel for arc and oxy-acetylene welding. Invitations will be issued to concerns making line pipe, tankage, chemical and petroleum equipment, and to structural fabricators and shipbuilders to pool their information and help write

a specification covering the chemical and physical properties of steel which will give satisfactory results in production welding.

An exhaustive series of tests has been made by another group to determine how the properties of forging billets are affected by the degree of reduction from the ingot. It was found that a reduction of three to one from ingot to billet secured nearly all the benefit that could be discovered in greater reduction, either under the hammer or press. Test pieces were cut parallel to the axis of the billet.

Much thought is also being given to the correct method of testing heat-treated alloy steel forgings. It is recognized that rapid testing, which satisfactorily determines the yield point of a soft steel, will give erratic and misleading results. A series of comparative tests is therefore being made to discover whether a slow rate of loading will give a yield point bearing a consistent relation to the elastic limit as determined by a stress-strain curve, or by increasing speed of the needle on an extensometer.

Proof testing for permanent set was also mentioned as a possible commercial requirement for test pieces cut from forgings heat treated for high strength and severe duty.

packs to the entrance end of the continuous furnace, where they are charged into the furnace. The man at this point need not be a skilled heater, it is emphasized, as all temperature controls can be arranged on an automatic basis. The furnace is designed to give proper heating at a speed equivalent to the rolling speed.

The discharge of the pack from the exit end of the furnace is automatic and controlled by the roller. This permits a reduction in crew from that required on the conventional sheet and pair furnace installation.

"Educational" Orders Urged for Preparedness

WASHINGTON, Jan. 15.—Enactment of the bill of Representative Morin, of Pennsylvania, chairman of the House Committee on Military Affairs, permitting the Secretary of War to place "educational" orders with commercial plants in times of peace as a means of promoting industrial preparedness, was urged at hearings before the committee on Friday and Saturday of last

week. Representatives of the National Association of Manufacturers, the Chamber of Commerce of the United States, prominent industrial leaders and army officers were among those who asked that the legislation be passed. Indications are that a favorable report will be made from the committee to the House on the bill, but its passage at the present session of Congress is considered improbable. The measure or one of a similar kind has been before the House and Senate Committees on Military Affairs for a number of years and was inspired by the experience of industry in getting prepared to produce munitions and equipment to meet World War requirements.

Sheet Mills to Finish Light Gage Material

The American Rolling Mill Co. is installing 13 sheet mills at its Butler, Pa., works, built by the National Roll & Foundry Co., Avonmore, Pa. These mills will be used for finishing material lighter than No. 22 gage or calling for a finish not easily attainable on the automatic strip mills. The strip mill at this plant is being used to produce strips and sheets to and including No. 22 gage, but there is a possibility that eventually even lighter gage material will be produced. Only a small part of the output of the Butler plant runs lighter than No. 22 gage.


Aluminum Alloy Sheet Mill at Alcoa, Tenn.

The Aluminum Co. of America has announced that work has already started on the erection at its Alcoa, Tenn., plant of a new rolling mill for the production of all grades of strong aluminum alloy sheets and plates. The mill will furnish employment for approximately 500 men, and the electric power requirement will be 15,000 hp. It is designed for an initial monthly production of 1,000,000 lb., with an ultimate capacity of 3,000,000 lb.

Mossberg Company Plans to Expand

The Mossberg Pressed Steel Corporation, Attleboro, Mass., started the new year with unfilled orders amounting to three months' output against an ordinary backlog of 30 days. Its plant, which had been working on a part overtime basis, was placed on a 24-hr. schedule. A substantial increase in size of plant is in contemplation.

The company specializes in the design and manufacture of pressed steel reels, spools, vulcanizing pans, vulcanizing reels, braider carriers and allied equipment for the wire industry, and pressed steel beams, beam heads and non-chafing drop wires for the textile mills.



Aetna-Standard to Build Pack Heating Furnaces

The Aetna-Standard Engineering Co., Youngstown, has been licensed to build or have built for the steel industry continuous pack heating furnaces under the patent applications of the American Sheet & Tin Plate Co., Pittsburgh, and the Flinn & Drefflein Co., Chicago. The latter will act as engineer and furnace erector for the Aetna-Standard company.

There are approximately 30 continuous pack heating furnaces of various sizes in operation producing tin plate, black sheets and full finished sheets. The increase in tonnage when a finishing mill is equipped with this type furnace has been marked; 25 to 30 tons of No. 18 to No. 20 gage sheets, 36 in. wide, 76 in. to 84 in. long, were finished in an 8-hr. period on one mill, and equivalent tonnages of lighter gages have also been produced.

The continuous pack heating furnace can be used effectively in the conventional sheet mill by having the roughing work done on the roughing mills and delivering the roughed

Record Steel Furniture Orders in 1928

WASHINGTON, Jan. 14.—Orders for steel furniture in 1928 exceeded those of 1927, the volume of sales done in the business group having been \$32,365,488 for the first 11 months of 1928, against \$27,910,029 in the corresponding period of 1927. Sales in the shelving group were \$8,772,477 and \$6,731,846 respectively, according to the Department of Commerce. Orders for business furniture in November amounted to \$2,677,680, compared with \$3,192,927 in October, while shipments were \$2,856,569 and \$3,158,998 respectively. Unfilled orders in November were valued at \$1,914,222, against \$958,726 in October. Orders for shelving furniture in November were valued at \$875,354, against \$958,726 in October, while shipments were \$915,640 and \$953,804 respectively and unfilled orders \$720,888 and \$760,104 respectively.

Not only did the 11 months of 1928 show orders greater by 16 per cent than in 1927, but they were 5.3 per cent above the entire 12 months of 1927, in the business group. Shelving orders exceeded those of 1927 by almost 30 per cent, and in 11 months topped the 12-month total of 1927 by about 20 per cent.

Railroads Expect Increase in Car Loadings

WASHINGTON, Jan. 12.—Iron and steel shipments during the first quarter of 1929 are estimated at 442,844 carloads, against 420,199 carloads for the first quarter of 1928, an increase of 5.4 per cent, by the Shippers' Regional Advisory Board, American Railway Association.

Coal and coke shipments are estimated at 2,953,917 carloads, an increase of 5.3 per cent over the first quarter of 1928. Machinery and boiler shipments are estimated at 49,912 carloads, an increase of 8.9 per cent.

Much Heavier Ore Imports in November

WASHINGTON, Jan. 14.—Imports of iron ore into the United States in November increased to 223,144 gross tons, against 169,902 tons in October, 1928, and 199,568 tons in November, 1927. For the 11 months ended with November, 1928, the total was 2,280,247 tons, compared with 2,488,871 for the corresponding period of 1927.

During both periods the largest

shipments came from Chile, which supplied 1,320,900 tons for the 11 months of last year, compared with 1,307,700 tons for the corresponding period of the preceding year. Second place both years was held by French Africa, with Cuba in third position.

Electric Power Output High

Production of electric power by public utility power plants in the United States in November is reported by the Geological Survey at 7753 millions of kwhr. While this shows a reduction from the October total of 7926, it represents a higher daily average. In fact, the daily average in November was higher than for any previous month in history, as was true successively of the figures for September and October, 1928. The September total was 7282.

Nearly two-thirds of the production reported was from the consumption of fuels. There has been a drop in the water-power contribution from 2791 in September and 2876 in October to 2781 in November—the last figure representing about 36 per cent of the month's total.

Zinc Production Increased in 1928

Output of primary metallic zinc from domestic ores in 1928 was about 582,100 tons and that from foreign ores was about 12,400 tons, a total of 594,500 tons, according to the United States Bureau of Mines. This compares with 576,960 tons from domestic ores and 15,556 tons from foreign ores, a total of 592,516 tons, in 1927. In addition to the output of primary zinc there was about 52,100 tons of redistilled secondary zinc, compared with 42,784 tons in 1927, making a total supply of distilled and electrolytic zinc in 1928 of about 646,600 tons, composed of 238,200 tons of high-grade and intermediate, 80,100 tons of select and brass special, and 328,300 tons of prime Western zinc.

Of the total output of primary zinc in 1928, 160,000 tons was electrolytic zinc produced in Montana and Idaho, 105,000 tons was made in Pennsylvania, 104,000 tons in Illinois, 103,000 tons in Oklahoma, and the remainder in Arkansas, Indiana, Kansas, Texas and West Virginia.

Imports of slab zinc for 11 months amounted to only 3 tons. Exports of slab zinc made from domestic and foreign ores amounted to 27,855 tons,

including 3869 tons of rolled zinc. The stock of zinc reported at smelters Nov. 30 was about 41,000 tons; no slab zinc was reported in warehouse. Apparent consumption of primary zinc in 1928 was about 578,000 tons, compared with 516,371 tons in 1927.

Lead Production Decreased in 1928

Output of primary domestic desilverized lead in 1928 was about 345,000 tons; of soft lead, about 226,000 tons; of desilverized soft lead, about 53,000 tons, making a total output from domestic ores of about 624,000 tons of refined lead, according to the United States Bureau of Mines. Corresponding figures in 1927 were 378,889 tons of desilverized lead, 233,944 tons of soft lead, and 55,487 tons of desilverized soft lead, making a total of 668,320 tons. The output of lead smelted and refined from foreign ore and bullion was about 156,000 tons, compared with 128,210 tons in 1927.

Total primary lead smelted or refined in the United States in 1928 was thus about 780,000 tons, compared with a total of 796,530 tons in 1927—a decrease of over 2 per cent. The output of antimonial lead in 1928 was about 25,000 tons, compared with 24,347 tons in 1927.

Imports of refined pig lead for 11 months amounted to 605 tons, of which 546 tons came from Mexico. The base bullion imported during the same period contained 114,836 tons of lead, almost wholly from Mexico. Exports of lead of foreign origin amounted to nearly 98,000 tons, compared with 122,734 tons exported in the entire year 1927. Exports of lead of domestic origin amounted to 10,858 tons, against 2533 in 1927.

Exclusive of stocks of lead at smelters and refineries, and estimating the amount of lead exported with benefit of drawback, it is calculated that the new supply of lead made available for consumption in 1928 was about 653,000 tons, compared with 663,412 tons in 1927.

Slight Decline in Industrial Coal Stocks

Stocks of anthracite and bituminous coal on hand in industries in the United States and Canada Dec. 1 are estimated by the National Association of Purchasing Agents at 41,010,000 tons. This was more than 1 per cent below the total for Nov. 1, but otherwise was the highest figure since May 1. There has been a maximum change in seven months of only about 5 per cent between the highest and the lowest monthly figures.

Stocks Dec. 1 were estimated as equivalent to 32 days' supply for industries in general. The steel mills and railroads were credited with 28 days' supply each; by-product coke plants, 27 days'; electric utilities and coal gas plants, 54 days'; and other industries, 31 days'.

SOURCES OF AMERICAN IMPORTS OF IRON ORE

| | (In Gross Tons) | | Eleven Months Ended November | |
|----------------------|-----------------|---------|------------------------------|-----------|
| | November | | November | |
| | 1928 | 1927 | 1928 | 1927 |
| Spain | 7,400 | ..... | 37,165 | 27,165 |
| Sweden | 6,944 | ..... | 26,558 | 217,272 |
| French Africa..... | 14,000 | 26,599 | 417,630 | 446,420 |
| Canada ..... | ..... | 3,007 | 45,359 | 19,665 |
| Cuba | 44,000 | 22,500 | 321,286 | 362,613 |
| Chile | 150,800 | 141,300 | 1,320,900 | 1,307,700 |
| Other countries..... | ..... | 6,162 | 111,349 | 108,036 |
| Total | 223,144 | 199,568 | 2,280,247 | 2,488,871 |

Price Discrimination Held to Be an Evil

United States Supreme Court Finds Against American Can Co. in Case Brought Under Clayton Anti-Trust Act

WASHINGTON, Jan. 15.—Much importance is attached to the recent decision of the Supreme Court of the United States in which it interpreted the price discrimination (Section 2) clause of the Clayton anti-trust law in the American Can Co. case as prohibiting a manufacturer from giving better prices to one buyer than to another, quality and quantity considered, and allowance being made for differences in freight costs.

The section provides, in substance, that it shall be unlawful for any person engaged in commerce, in the course of such commerce, to discriminate in price between different purchasers * * * where the effect of such discrimination may be to substantially lessen competition or tend to create a monopoly in any line of commerce. The Supreme Court reversed the decision of the Federal District Court of Indiana, which had upheld the American Can Co. in its contention that the words "in any line of commerce" referred to the line of commerce in which the seller is engaged, and that inasmuch as it was engaged in the manufacture of tin cans, while the purchasers, the George Van Camp & Sons Co. and the Van Camp Packing Co., were engaged in the packing of food products, the prohibition against price discrimination did not apply against it.

The Supreme Court decision, rendered through Mr. Justice Sutherland, said that the phrase, "in any line of commerce," "is comprehensive

and means that if the forbidden effect or tendency is produced in *one* out of *all* the various lines of commerce, the words 'in any line of commerce,' are literally satisfied." The court repudiated the contention that the words must be confined to the particular line of commerce in which the discriminator is engaged, and that they do not include a different line of commerce in which purchasers from the discriminator are engaged in competition with one another.

The George Van Camp & Sons Co. brought suit in the court in Indiana to enjoin the American Can Co. from selling tin cans to the Van Camp Packing Co. at less than it charged Van Camp Sons' Co., preventing the packers from competing on the basis of the quality of their products and tending to create a monopoly in the Van Camp Packing Co.

"The fundamental policy of the legislation is that, in respect of persons engaged in the same line of interstate commerce, competition is desirable, and that whatever substantially lessens it or tends to create a monopoly in such a line of commerce is an evil," the Supreme Court said. "Offense against this policy, by a discrimination in prices exacted by the seller from different purchasers of similar goods, is no less clear when it produces the evil in respect of the line of commerce in which they are engaged than when it produces the evil in respect of the line of commerce in which the seller is engaged."

over an extended period of time, to secure a direct comparison as regards durability and cost of maintenance, with more or less conventional construction (steel tube fuselage and wood wings). This protracted period, we are glad to say, has resulted in giving our type of all-metal construction a clean bill of health, and production on a large scale is forecast for the near future."

Stoker Sales Heavy in 1928

WASHINGTON, Jan. 14.—Mechanical stokers to the number of 1490, with total rating amounting to 508,687 hp., were sold in 1928, against 1374 with 483,602 hp. in 1927, according to reports received by the Department of Commerce from manufacturers. Of the 1928 sales, 547 stokers with 83,714 hp. were installed under firetube boilers and 943 with 424,973 hp. were installed under watertube boilers, comparing with 479 with 71,923 hp. and 895 with 411,679 hp. respectively in 1927.

Sales in December represented 102 stokers with 49,212 hp., against 116

with 30,938 hp. in November. The December sales were 53 per cent higher than in December, 1927, and were the heaviest since last September and the fourth largest for any month of 1928.

Steel Corporation Orders Increase in December

An increase of 303,712 tons in the unfilled orders on the books of the United States Steel Corporation was made in December. On Dec. 31, 1928, total unfilled business was 3,976,712 tons, compared with 3,673,000 tons on Nov. 30. The increase last month compares with a decrease of 78,030 tons in November. In August, September and October there were increases. On Dec. 31, 1927, the unfilled orders were 3,972,874 tons. The table gives the reported figures for the last 24 months.

| | 1928 | 1927 |
|---------------|-----------|-----------|
| Jan. 31..... | 4,275,947 | 3,800,177 |
| Feb. 28..... | 4,398,189 | 3,597,119 |
| March 31..... | 4,335,206 | 3,553,140 |
| April 30..... | 3,872,133 | 3,456,132 |
| May 31..... | 3,416,822 | 3,050,941 |
| June 30..... | 3,637,009 | 3,053,246 |
| July 31..... | 3,570,927 | 3,142,014 |
| Aug. 31..... | 3,624,043 | 3,196,037 |
| Sept. 30..... | 3,698,368 | 3,148,113 |
| Oct. 31..... | 3,751,030 | 3,341,040 |
| Nov. 30..... | 3,673,000 | 3,454,444 |
| Dec. 31..... | 3,976,712 | 3,972,874 |

At the end of April, 1917, the highest total in unfilled orders of the Steel Corporation ever attained was reported, at 12,183,193 tons. The lowest figure ever reported was 2,754,757 tons, Dec. 31, 1910.

1928 Iron and Steel Output in Britain Shows Decline

LONDON, ENGLAND, Jan. 11 (By Cable).—December pig iron output was 540,400 gross tons and that of steel ingots and castings was 683,100 tons, both less than the November totals.

December production, compared with that of October and November and with the monthly rate to Oct. 1, last year, and for other years, is given in the following table in gross tons:

| | Pig Iron, Tons | Steel Ingots and Castings, Tons |
|-----------------------------|----------------|---------------------------------|
| 1913—Av. monthly... | 855,000 | 638,600 |
| 1920—Av. monthly... | 669,500 | 755,600 |
| 1922—Av. monthly... | 408,500 | 490,100 |
| 1923—Av. monthly... | 620,000 | 706,800 |
| 1924—Av. monthly... | 609,900 | 685,100 |
| 1925—Av. monthly... | 519,700 | 616,400 |
| 1926—Av. monthly... | 203,500 | 296,700 |
| 1927—Av. monthly... | 607,800 | 758,200 |
| 1928—To Oct. 1, monthly av. | 552,800 | 702,700 |
| 1928—October | 543,600 | 756,000 |
| 1928—November | 544,400 | 762,500 |
| 1928—December | 540,400 | 683,100 |

Last year's total pig iron production was 6,603,600 tons or 550,300 tons per month. This is a decline from the 607,800 tons per month in 1927. Steel ingot and castings output in 1928 was 8,525,900 tons or 710,500 tons per month, also less than the 758,200 tons per month in 1927.

Thomas-Morse Now Building All-Metal Aircraft

The Thomas-Morse Aircraft Corporation, Ithaca, N. Y., is in production on all-metal aircraft for the United States Air Corps at its plant on South Tioga Street, that city. This company says:

"We are at present the only manufacturer producing all-metal aircraft for the Army. It may be of interest that we are pioneers of all-metal construction in this country, our experimental and development work dating back to 1919. The orders on our books for the Army account alone now total approximately \$222,000. We do not manufacture commercial aircraft, restricting our activities solely to military type airplanes.

"The tardy recognition by the Government of the advantages of all-metal construction has been due to lack of funds to pay the cost of such development, to adverse reports regarding the duralumin metal structural failure as a cause of the Shenandoah disaster, and the necessity for service test of all-metal airplanes

Little Change Seen in European Markets

German Wages and Hours Settled by Arbitration—French Expect Good Business in 1929—British Ship Orders Help

(By Cable)

LONDON, ENGLAND, Jan. 14.

INCREASED steel business is reflected in a better demand for pig iron and Cleveland makers are well situated with their output restricted. The market for hematite iron is improving with good domestic and export business particularly with Italy. Prices are firm and show an upward tendency. Foreign ore is quiet but prices are steady.

Finished steel demand has increased as a result of recent shipbuilding contracts and heavy mills are better booked with business than for some weeks. The British Southern Railway has planned a building and extension program for this year, involving £1,750,000. Richard Thomas & Co., Ltd., Swansea, will resume operation of its Redbourne Hill steel plant at Scunthorpe, Lincolnshire, after three years of idleness. The plant will make ingots for rolling into semi-finished material and will produce about 3000 tons of ingots a week.

Head, Wrightson & Co., Ltd., has received an order for 8800 tons of steel for a new bridge at Lagos, Nigeria.

New shipbuilding on northeast coast now totals about 100 vessels. Thomas W. Ward, Ltd., Sheffield, has acquired the Cardbrook Steel Works, Tinsley, Sheffield.

December exports of pig iron totaled 41,500 tons, of which the United States received 5000 tons. Total iron and steel exports were 359,000 tons.

Tin plate is quiet, but demand is improving and the outlook is brighter with some mills already well booked for the first half of the year on the present basis of restricted output. Galvanized sheets are active in small lots and prices are stiffening. Black sheets are quiet.

The Continental market is firm with increased buying by United Kingdom and oversea users, and mills are showing reluctance to sell too freely. Some merchant bar sellers are asking up to £6 5s. per ton (1.37c. per lb.), f.o.b. Antwerp.

the smaller advances, so that there will be less disparity in wages. The new wages will be 66 to 90 pf. (15.70c. to 21.42c.) per hr., depending upon the class of employee, compared with a former wage of 60 to 89 pf. (14.28c. to 21.18c.) per hr. Piece-rate workers, who formerly worked on a guarantee of a wage 10 per cent above the average rate, will be guaranteed 15 per cent above, but this will have little effect, as most of these workers are now receiving 15 per cent more than the average wage.

Certain reductions in working hours are to be made. In departments where the 60-hr. week has obtained, the hours are reduced to 57. Of the 220,000 men involved in the wage revision, about 100,000 are employed in iron and steel mills, of which about 85 per cent are piece-rate workers. The remaining 120,000 workers are employed in metal manufacturing plants; about 60 per cent of these are on a piece-rate basis.

The gain to the employees is small, and in view of the complexity of the new wage system, no estimate has yet been made of the cost to the steel mills. It is not yet known whether steel prices will be advanced, but it is noteworthy that the Stahlwerksverband and other syndicates are still booking tonnage for future delivery at unchanged prices.

Recently the Federation of Labor Unions demanded that the entire iron and steel industry be placed under public control, to be governed by a

Decision in German Wage Dispute Arbitrator Awards Small Increases and Reduces Working Hours—New Cold-Rolled Syndicate Formed

BERLIN, GERMANY, Jan. 3.—The arbitrator in the wage dispute in the Northwestern steel mills has rendered a decision. The award, which both

parties agreed in advance to accept, grants to time workers increases of 1 to 6 pf. (0.238c. to 1.428c.) per hr. The more highly paid workers receive

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works with American equivalent figured at \$4.85 per £ as follows:

| | | |
|---|-----------------|----------------|
| Durham coke, del'd.... | £0 17½s. | \$4.30 |
| Bilbao Rubio ore..... | 1 2 to £1 2½s. | 5.34 to \$5.46 |
| Cleveland No. 1 foundry | 3 8½ to 3 9½ | 16.61 to 16.85 |
| Cleveland No. 3 foundry | 3 6 | 16.00 |
| Cleveland No. 4 foundry | 3 5 | 15.76 |
| Cleveland No. 4 forge.. | 3 4½ | 15.64 |
| Cleveland basic (nom.) | 3 5 | 15.76 |
| East Coast mixed..... | 3 11 | 17.22 |
| East Coast hematite.... | 3 11½ | 17.34 |
| Rails, 60 lb. and up.... | 7 15 to 8 5 | 37.59 to 40.01 |
| Billets..... | 6 5 to 6 10 | 30.31 to 31.53 |
| Ferromanganese..... | 13 15 | 66.69 |
| Ferromanganese (ex- port)..... | 14 0 | 67.90 |
| Sheet and tin plate bars, Welsh..... | 6 0 | 29.10 |
| Tin plate, base box.... | 0 18 to 0 18½ | 4.37 to 4.43 |
| Black sheets, Japanese specifications..... | 13 7½ | 64.87 |
| Ship plates..... | 7 12½ to 8 2½ | 1.66 to 1.76 |
| Boiler plates..... | 9 0 to 10 10 | 1.95 to 2.27 |
| Tees..... | 8 2½ to 8 12½ | 1.76 to 1.86 |
| Channels..... | 7 7½ to 7 17½ | 1.60 to 1.71 |
| Beams..... | 7 2½ to 7 12½ | 1.55 to 1.65 |
| Round bars, ¾ to 3 in.. | 7 10 to 8 0 | 1.63 to 1.73 |
| Steel hoops..... | 9 0 to 10 0 | 1.95 to 2.16 |
| Black sheets, 24 gage.. | 10 0 | 2.16 |
| Galv. sheets, 24 gage.. | 13 12½ to 13 15 | 2.95 to 2.98 |
| Cold rolled steel strip, 20 gage (nom.)..... | 16 0 | 3.47 |

*Ex-ship, Tees, nominal.
(a) Nominal.

Continental Prices All F.O.B. Channel Ports

| (Per Metric Ton) | | | |
|-----------------------|-------------------|--------------------|------------|
| Foundry pig iron (a): | | | |
| Belgium..... | £3 3½s. to £3 6s. | \$15.39 to \$16.00 | |
| France..... | 3 3½ to 3 6 | 15.39 to 16.00 | |
| Luxemburg..... | 3 3½ to 3 6 | 15.39 to 16.00 | |
| Basic pig iron (a): | | | |
| Belgium..... | 3 4½ to 3 5½ | 15.64 to 15.88 | |
| France..... | 3 4½ to 3 5½ | 15.64 to 15.88 | |
| Luxemburg..... | 3 4½ to 3 5½ | 15.64 to 15.88 | |
| Coke..... | 0 18 | 4.37 | |
| Billets: | | | |
| Belgium..... | 5 2 | 24.73 | |
| France..... | 5 2 | 24.73 | |
| Merchant bars: | | | |
| Belgium..... | 6 3 to 6 5 | 1.35 to 1.37 | C. per Lb. |
| France..... | 6 3 to 6 5 | 1.35 to 1.37 | |
| Luxemburg..... | 6 3 to 6 5 | 1.35 to 1.37 | |
| Joists (beams): | | | |
| Belgium..... | 5 3 | 1.13 | |
| France..... | 5 3 | 1.13 | |
| Luxemburg..... | 5 3 | 1.13 | |
| Angles: | | | |
| Belgium..... | 6 1½ | 1.32 | |
| ¼-in. plate: | | | |
| Belgium (a)..... | 6 11 | 1.44 | |
| Germany (a)..... | 6 11 | 1.44 | |
| ¾-in. ship plate: | | | |
| Belgium..... | 6 6 | 1.39 | |
| Luxemburg..... | 6 6 | 1.39 | |
| Sheets, heavy: | | | |
| Belgium..... | 6 1 | 1.31 | |
| Germany..... | 6 1 | 1.31 | |

joint council of employers and employees.

The strike in the Baltic and North Sea shipyards continues and is now entering its fourth month.

Less Export Business

Export business has declined, but producers believe that by price concessions in the coming year they will be able to increase their shipments abroad to offset the expected decline in domestic buying. Business with Norway, Sweden and Spain is good, but trade with the Near East is small and Russian business has declined somewhat because of disagreements over terms of payment. Prospects are considered favorable for increased exports to South America and the Far East.

Export demand for machine tools continues heavy, but builders have shaded prices to such an extent that many sales show no profit. Foreign trade in cutlery is satisfactory. While the latest figures show a decline in exports, the reduction is only apparent, resulting from a recent change in the methods of gathering data. Exports of cutlery to European countries have increased.

Large Reparations Contracts Placed

Most of the large German companies report profits for the past year

and are paying increased dividends in some instances. The General Electricity Co. has entered into an agreement to take over, on April 1, the electric department of the Maschinenfabrik Esslingen, a company largely controlled by Gutehoffnungshütte. Recently the Deutsche Bau Consortium, a syndicate of medium and small-sized construction companies, obtained three reparations orders valued at about 45,000,000 m. (\$10,710,000). These contracts are for water control works in the French Alps and at Bordeaux, and harbor works on the Seine River.

The German Cold-Rolled Band Syndicate was established Jan. 1. Hitherto there has been a rather general price agreement among cold-rolled band makers. The new cartel will control domestic sales of cold-rolled bands of less than 0.25 per cent carbon content. The European Rail Makers' Association has appointed a commission to consider the necessary changes in policy for renewal of the association after the present agreement expires on March 31. Germany is understood to have proposed new quotas, partly on the basis of reparations deliveries of rails. Penalties for excess production of rails, now 7s. 6d. to 12s. 6d. (\$1.82 to \$3.04) per ton, are considered inadequate and will probably be increased.

French Market Quiet But Strong

Mills Only Moderately Filled, But Foresee Heavy Buying During Year—New Scrap Export Quotas

PARIS, FRANCE, Jan. 2.—Business has been inactive during the holiday period, but prices continue firm and an early revival of demand is looked for, as some substantial construction projects are in prospect for this year. Unfavorable factors in the present industrial situation include possible labor difficulties, expected increases in fuel prices and increased overhead as a result of the new social insurance law.

Negotiations are to be resumed for the renewal of the Entente of Franco-Belgian-Luxemburg Foundry Iron Producers. Under the new agreement it is expected that the Belgian quota will be fixed at 41 per cent of the total output for export to France, 40 per cent for Belgian domestic consumption and 19 per cent for export to Luxembourg. At the next meeting of the International Steel Cartel in Brussels, about the middle of March, consideration will be given to the German claim of compensation for the shortage in production caused by the recent lockout in German mills. This shortage amounted to 950,000 tons of steel ingots in November, the month of the lockout, as compared with October. Apparently Germany wants compensation in an expansion of its production quotas rather than a cash indemnity.

It is noteworthy that at the December meeting of the cartel the French representatives sought an increase of 1,000,000 tons in the total annual quota of 29,278,000 tons for all members. This is the result of continually increasing production by French mills, which now are facing payment of considerable sums each quarter for output in excess of the French quota. The proposal was defeated by the German, Belgian and Luxembourg representatives, but will probably be brought before the March meeting of the cartel.

Sheet prices are substantially unchanged, with mill order books insufficiently filled. Delays in delivery seldom exceed four weeks on plates, but in some instances extend to three months for light-gage sheets. The Wire Rod Comptoir has decided provisionally to maintain its present base price to domestic consumers for January and February. As the International Wire Rod Cartel will hold a meeting in Luxembourg on Jan. 10, an advance in the export price of wire rods is expected and a similar upward revision of the domestic price may follow.

Maintenance of export quotas on scrap will continue through 1929, with the export quota for Great Britain at 25,500 tons and for Bel-

gium at 76,000 tons. The export quota for Poland, which was 12,000 tons a year, expired on Dec. 31, and no decision as to the new quota has been reached. Italy's scrap quota from France was 160,000 tons in 1928, compared with 192,000 tons in 1927, and a new quota has not yet been established for 1929. In all these cases a supplementary quota of 20 per cent more is permitted of so-called "rolling scrap," its distribution being at the disposal of the Comité des Forges.

In the first 11 months of last year exports of pig iron totaled 581,624 tons and imports were only 14,378 tons. Exports of steel ingots in this period reached a total of 50,024 tons and only 50 tons was imported. The largest item in exports and imports was rolled steel products, which totaled 2,325,358 tons exported and 13,987 tons imported in 11 months. The movement of rails reached sizable proportions, with a total of 357,843 tons exported, compared with only 3633 tons imported. Wire rod exports totaled 229,651 tons, with 219 tons imported, and sheet exports totaled 215,975 tons, against 5935 tons imported. A total of 110,597 tons of hoops was exported in 11 months, and 1110 tons was imported.

Czechoslovakian Domestic Market Quite Active

PRAGUE, CZECHOSLOVAKIA, Jan. 2.—Iron and steel works here report good business, most plants being scheduled for capacity operation for the next few months. Most of this activity is the result of a heavy domestic demand, and mills are beginning to neglect export trade, since home prices are considerably higher than world market quotations. In some quarters a slight decline in demand is expected by the end of this quarter, as the prospect for spring building construction is not considered favorable.

The unemployment figure is the smallest since 1918. Steel production in the first nine months of 1928 was about 400,000 tons more than in the same period of 1927. Using the same months for comparative purposes, pig iron production increased 21 per cent and pig iron sales 36 per cent.

The Mining & Smelting Co., the Prague Iron Co. and the Poldi Steel Co. have all issued optimistic reports on their condition, and the Skoda works in November had 9000 more employees than at the same date in 1927, with 50 per cent more orders on its books. The Skoda works has a contract for 28 express locomotives from the State Railroads for 1929 delivery, and its associated company, the Adamsthalwer Machine Works, has booked an order for four locomotives. In competition with foreign companies the Skoda works has received a contract for two electric locomotives from the Japanese Imperial Government Railways.

Japan Inquires for Sheet Bars

May Buy Thomas Grade, But Bought Sizable Tonnage Here Last Year—Sales of Foreign Steel Here Are Small

NEW YORK, Jan. 15.—Japan is becoming an increasingly large user of semi-finished steel. In the past few months about 11,000 tons of sheet bars has been bought by Japanese rolling mills from American producers, and at present the Kawasaki Dockyards Co., Kobe, the largest Japanese producer of light-gage black sheets, is in the market for about 15,000 tons of sheet bars, either open-hearth or Thomas steel being acceptable. While quotations of Continental producers on Thomas steel sheet bars would be lower than American prices, the fact that the Kawasaki company produces high-grade light-gage sheets may influence the purchase of open-hearth material here, even at a slightly higher figure. Aside from this tonnage, inquiries from Japan are confined to small lots of material. Recently Japanese wire mills bought a considerable tonnage of European wire rods. Based on recent offers to exporters here, they are unwilling to

pay more than \$44 per ton, c.i.f. Japan, for high-carbon rods, which is considerably lower than American mill prices.

The Chinese market continues inactive except for a moderate volume of sulphate of ammonia buying. Chinese merchant offers for plate cuttings have been about 50c. a ton less than the tenders of \$28 per ton, c.i.f. Shanghai, made late last year. Chinese offers on tin plate waste are too low to interest American sellers.

Local importers of foreign steel report a general slackening of structural steel business and a slight advance in quotations of European mills. Steel bars are quoted at about 2.05c. per lb., duty paid, New York, and shapes at 1.80c. to 1.85c. per lb., New York. Importers evince considerable interest in the hearings in Washington on the steel schedule of the tariff, but are apparently not intending to appear at the hearings to oppose possible increases.

Lower Costs Needed to Aid Shipbuilding

Shipping Board Calls Conference to Consider Problem and Suggests Naval Contracts for Private Yards

WASHINGTON, Jan. 15.—Differences between shipbuilding costs in the United States and abroad will be the outstanding subject discussed at the second national conference on the merchant marine called by the Shipping Board for Jan. 23 in Washington.

"This is a problem, which must be solved in some way if the Merchant Marine act (Jones-White law) of 1928, providing aids for American-built ships, is to prove effective in stimulating the growth and prosperity of privately-owned American shipbuilding," the board declared in its announcement. "Three basic elements are involved, the cost of labor, the cost of material, and the cost of overhead. The problem is to reduce these costs without lowering the American standard of living, or without seeking to have foreign materials admitted free of duty, to the detriment of American producers and manufacturers. The conference will probably investigate the possibility of reducing the differential by securing naval work for private yards; by having American yards specialize in particular types of ships; by the application, wherever possible, of mass production methods; by standardization of procedure; and by such other reforms in business practice as may tend to simplify and expedite the work."

The board said that it is of the opinion, as indicated in a recent resolution forwarded to the United States

Senate, that contracts for the construction of naval vessels should properly be made with private American shipyards, rather than to have the work assigned to yards operated by the Government. With the increased business that such a policy would afford, the private American yards would be able to distribute their overhead costs between work for the Navy and work for the merchant marine, both of which are vital and inseparable parts of the nation's first line of defense, according to the board.

The conference agenda, approved by the board, covers a number of problems, old and new, which press more or less insistently for solution if the development of the merchant marine is to follow the lines laid down by Congress. Among the matters which will engage the attention of the delegates, in addition to differences in costs of construction in the United States and abroad, are methods of securing more patronage for American ships; the advisability of enacting an "anti-poaching" act to prevent foreign ships from encroaching on direct trade of the United States with other nations; the possibility of securing lower rates through the Panama Canal; a discussion as to the advisability of extending the protective coastwise laws to the Philippine Islands; the wiping out of operating differentials which now handicap American cargo ships; disposition of 400 surplus vessels which

the Government still holds in its laid-up fleet; questions relating to safety of life at sea; the securing of more equitable insurance rates for American ships; the Americanization of crews of American merchantmen; discriminating duties in indirect trade; mail contracts; marine engineering progress and research; establishment of foreign trade zones in ports of the United States and a merchant marine naval reserve.

It is expected that the conference will be attended by leading American shipowners, operators, designers, builders, ship material producers, representatives of trade associations, marine labor leaders and by delegates from other national organizations interested in ships and waterborne commerce.

Italians Wish to Revise Scrap Purchase Terms

HAMBURG, GERMANY, Jan. 2.—Italian importers of steel scrap, who have been buying considerable quantities in the United States, have been complaining of the poor quality of the material received from all foreign sources. Recently these importers have been discussing the advisability of changing the terms of payment under which they will transact business. At present the terms are 90 per cent of the invoiced price against bill of lading and the balance after inspection at the port of shipment. The suggested new terms, which it is believed scrap sellers in other countries will refuse to accept, are 80 per cent of the invoiced price against bill of lading and the balance after arrival of the scrap at consumers' plants in Italy.

Germany Increasing Output of Magnesium Alloy

HAMBURG, GERMANY, Jan. 3.—A recent report of the American trade commissioner in Berlin states that German output of "Electron," or magnesium alloy, during the coming year is estimated at 10,000 tons. The outstanding producer of this metal in Germany is the I. G. Farbenindustrie, the German Dye Stuff Corporation. This company has not given out production statistics on magnesium metal since 1925, when the output was 1500 tons. From unofficial sources, it is reported that current production is from 4500 to 5000 tons annually.

German Railroads Accept Armco Iron

HAMBURG, GERMANY, Jan. 3.—The German railroad companies have included Armco iron in their specifications of materials acceptable for use in bridge construction and other work. Armco iron is manufactured in Germany under license by the Vereinigte Stahlwerke A. G. at Düsseldorf. Some sizable railroad contracts are expected to be closed soon.

This Issue in Brief

Unfilled steel orders highest since March, 1928. Steel Corporation's unfilled tonnage at Dec. 31 was 3,976,712, a gain of 8.2 per cent over Nov. 30 total.—Page 227.

* * *

Cause of defects in castings is readily traced by consulting records. Piston ring manufacturer "keeps track" of the properties of raw materials and melting factors, and also records sand mixtures, condition of molding equipment, and means of cutting sand.—Page 202.

* * *

Labor turnover is kept low by filling vacancies by promotion. Thus, a competitive condition is set up among employees in all departments of steel company. A card record is kept of each employee, and a requirement for promotion is that he study the job ahead of him.—Page 204.

* * *

Both head and flange sections of split rails are rolled into reinforcing bars simultaneously on new mill. One end of the roll is grooved to roll the head section, and the opposite end is designed to take the flange section. Thus, only one heating is required.—Page 208.

* * *

Welding I-beams by butt-plate process provides a joint as strong as continuous beam. The joint is stronger than the ordinary butt joint and more economical than the splice weld.—Page 210.

* * *

Demand for steel will be well-sustained during first quarter, says Dr. Haney. Downward trend in certain consuming industries is counter-balanced by improvement in others. Finds steel production in good adjustment with consumption.—Page 211.

"Help Wanted" needs are filled by employees. Ohio manufacturer gets excellent results by asking employees to submit names of men to fill vacancies. Employees know the work and the qualifications it requires. They also know the character and ability of an acquaintance better than does an employment man.—Page 207.

* * *

Forging billets reduced 3 to 1 from ingot have nearly all the benefits that can be obtained from reduction. Testing Society group reports. Tests reveal no appreciable advantage of greater reduction, either under hammer or in press.—Page 225.

* * *

Price discrimination is illegal, United States Supreme Court rules. Finds against can manufacturer for selling to one packer at a lower price than to another. Rules that, under Clayton anti-trust law, seller has no right to discriminate between one buyer and another, quality and quantity considered.—Page 227.

* * *

Production board enables foundry head to see at a glance the daily record of each molder. Number of good castings, and also bad pieces, made by each man, are shown on board, along with a schedule of orders covering the next seven days' requirements.—Page 201.

* * *

Candidates for better jobs of a hazardous and difficult nature are trained in the jobs on their own time. Where the nature of a job is such that it cannot be filled by a green man, Armco selects a candidate and he is trained *after working hours*. Thus emergency conditions are anticipated.—Page 205.

Pig iron price advance appears to have been definitely checked, says Dr. Haney. But pig iron is cheap in comparison with scrap, so steel makers are likely to use more of their iron and thus compete less with merchant furnaces.—Page 212.

* * *

New high record in building construction established in 1928. Contracts in 37 States east of the Rocky Mountains totaled over 6.6 billion dollars, 4 per cent above the previous record year, 1926.—Page 212.

* * *

Higher import duties asked on steel. Steel makers declare that their profits are too low, and that a letup in demand might eliminate profits altogether and prevent maintenance of present wage scale.—Page 219.

* * *

"Labor audit" made annually enables manufacturer to grade every employee. Employment department of steel company has a history card of each worker, and at least once a year every man is rated, based on data provided by his superior and often by his associates.—Page 206.

* * *

Merchant pig iron makers seek higher import duty. Present duty of \$1.125 a ton is not enough to meet foreign competition, they tell Congressional committee, and ask for tariff advance to \$3.—Page 219.

* * *

Steel prices have reached the peak of their moderate recovery, Dr. Haney believes. Average price of finished steel is relatively high in comparison with the general level of commodity prices, he declares.—Page 212.

A. I. FINDLEY
Editor

THE IRON AGE

W. W. MACON
Managing Editor

ESTABLISHED 1855

Real and Inflated Stock Values

WHILE some things in the stock market situation are understandable, many are still incomprehensible. Among the former, for example, we can appreciate the validity of the rise that has occurred in the copper and gasoline stocks, for in those industries there has been rationalization in management and the consequent enjoyment of more profit, with good prospect of its continuance.

We may understand, moreover, how special stocks in these groups have had spectacular rises. In the Sudbury district of Canada there has been a new development of copper-nickel ore and in Rhodesia several developments of copper ore which are of major character and are properly reflected in the stocks of the companies that possess them. Also companies that adventured into radiotelephony, rayon manufacture and numerous new chemical products have made their way into the profitable production of new things and new service that the people want; and in so doing they have opened new industrial empires whereof the revenues accrue to fortunate or far-sighted investors.

Such things we may understand, and understanding we may be sympathetic. Also may we appreciate that investors have become satisfied with a 5 per cent return on their money, whereas formerly they expected or required 6 per cent, and that there has been a corresponding inflation of market value, although we may be quite unable to grasp the reason for such a change in sentiment.

Anyhow, with such powerful forces in operations there is bound to be speculative participation and by-play in which understanding is not present in any way. An anecdote from a gossip column of a financial journal is in point:

"Buy 500 shares of P.D.Q. at the market," called a trader to the order clerk.

"You must have some good information on the stock," remarked a fellow trader.

"Don't know a thing about it," replied the first trader. "Don't know what it makes, what its earnings are or anything else. All I know is that it is going higher."

There is a lot of trading in stocks done with just such absence of logic. Some profits are made, just as they were by Bertie the Lamb, but sooner or later they are lost. Without any doubt a great deal of paper profit is soon going to be extinguished, for the bidding of stock prices up to a basis of 2 per cent yield and the paying of 8 per cent on debit balances are conditions that cannot be harmonized, nor even be reconciled for very long.

An investment expert remarked to the writer not long ago that this has been a market in which study of value did not count for anything. Probably the fact is it has counted for more than ever before. Those

who have made big profits have had a real idea of the value of the things in which they were participants and have held their stocks, unconcerned by market gyrations. It has been necessary, however, to revise old ideas in respect to values.

But if a stock has risen merely to its fair value, there is no good reason why a real investor should sell it and let the income tax gatherer come in for his cut in the profit. On the other hand, if something has become overinflated, the surrender of a part of the profit may be subordinate; but obviously the buyers of overvalued securities are bound to lose sooner or later.

Automotive Steel Consumption

IN 1928, for the first time, the automotive industry occupied first place as a consumer of steel. According to the annual ascertainment of THE IRON AGE the automotive industry took about 18 per cent of the total steel made in the United States last year, or somewhat over 6,500,000 gross tons. For 1927 the proportion had been 14 per cent and for 1926 it had been 14½ per cent. Passing over 1927, which was a slightly off year in steel production and a greatly off year in automobile production, from 1926 to 1928 there was 7 to 8 per cent increase in steel production, which with the increase in percentage means that the automotive industry consumed about 30 per cent greater steel tonnage in 1928 than in 1926. While this may seem surprising, some such finding was forecast in this department of THE IRON AGE of Nov. 1, when the automotive proportion for 1928 was put at about 17 per cent, this figure being repeated in another discussion Nov. 29.

In the production of passenger cars and trucks in the United States and Canada there was only 3 per cent increase from 1926 to 1928, so that 30 per cent more steel consumption needs to be accounted for. A large part of this increase lay in the increase in average weight of vehicle. There is, for one thing, the fact that the old Model T Ford constituted a large part of the 1926 production, while the new Ford was a much smaller proportion of last year's output. Of more importance is the fact that many cars, including the Ford, are made much heavier. They have more powerful engines and must be made stronger all around.

At 6,500,000 gross tons of steel being used in 1928 by the automotive industry, and about 4,630,000 passenger cars and trucks made in the United States and Canada, there is much steel to be accounted for outside the production of these cars and trucks, for dividing one into the other there is about 3140 pounds

of steel per vehicle. There is a large consumption apart from the production of these vehicles. Exports of "parts for assembly" other than to Canada amounted to \$12,968,903 in value in 1926, and about \$20,000,000 last year. A hint as to the growth in the manufacture of parts for replacement is furnished by the fact that exports of such parts totaled \$32,470,762 in 1926, but close to \$60,000,000 last year, yet there are only a few American cars abroad compared with those at home. About five times as many cars were continuously in service in the United States and Canada last year as were produced during the year, and even a small amount of repairing would run into much tonnage.

The Rise of Seamless Tubing

HOW rapidly conditions may change as to demand for steel products is illustrated by the rise in seamless tubes. In various finished steel products the record of recent years accustoms one to expect only mild changes, but one should be ready for surprises. Strips furnished an example in very recent years. From a production of 586,524 tons in 1920, strips passed into the million-ton class only five years later and, with 1,318,419 tons reported for 1927, it would be quite in line for the official report to show considerably in excess of 1,500,000 tons for 1928. In connection with the great vogue of strips, the sheet mills had a pleasant surprise last year, their output having a healthy gain despite the apparent competition of the new product.

Following unofficial talk for months past, referring to the building of a large seamless tube unit at the National works, McKeesport, of the National Tube Co., an official utterance late last week at the office of the Steel Corporation president indicates that the project is a "go" for the immediate future.

The demand prospects for seamless tubing, both in new uses and as a substitute for welded pipe, are very promising. In its earlier years seamless had quite a checkered career. There was much conflict of opinion as to the preferable process and costs were high. The war brought heavy demand and capacity was increased. Then after the war came the big problem—how to engage this large capacity. Costs had to be reduced and profits pared, but increasing demand soon took up the slack. The record of seamless tube production since the first official statistics, those for 1913, is as follows:

Seamless Tube Production

| Gross Tons | | Gross Tons | |
|------------|---------|------------|---------|
| 1913 | 108,567 | 1921 | 117,884 |
| 1914 | 90,595 | 1922 | 257,335 |
| 1915 | 139,668 | 1923 | 403,783 |
| 1916 | 190,473 | 1924 | 261,157 |
| 1917 | 226,675 | 1925 | 568,190 |
| 1918 | 292,894 | 1926 | 775,329 |
| 1919 | 197,369 | 1927 | 864,140 |
| 1920 | 291,570 | | |

It is possible that seamless tubes entered the million-ton class last year. If not, they soon will. Long ago they largely displaced welded material for boiler tubes, and lately they have had large use in deep oil and gas well drilling, while they have developed new consumption in lines of their own. Seamless has even been used for oil pipe line.

Yet it is not so long ago that quite an increase

occurred in welded pipe capacity, that increase centering largely in 1925. Meanwhile, particularly in the past year, electrically welded pipe, made from plates, has loomed up as a strong competitor of the welded product. Not to overlook another rising process threatening to introduce special competition in the field of butt weld pipe, there is the gas welding of strips, now being perfected for production on a large scale.

Cartels Found Too Inelastic

THE common legacy of the war—overcapacity or underdemand, according to one's point of view—focused attention both here and abroad on the need for group action to protect industry against unrestrained competition. In this country trade associations have grown in number and influence and latterly Federal cooperation has been sought in introducing so-called self-government in business. On the Continent, and particularly in Germany, where competition conditions were "savage," to use the description of Dr. Julius Klein, cartels were organized, which openly attempt a complete harnessing of competition by regulating production and fixing prices. Mergers, another result of sharp competition, also have been numerous in Germany.

That these economic developments abroad are not fulfilling expectations is indicated by Dr. Bernhard Dietrich, editor of *Ruhr und Rhein*, in an article in THE IRON AGE of last week. Both the European raw steel cartel and German domestic iron and steel syndicates are in jeopardy, he thinks; the international entente, because it is unresponsive to German pleas for a more equitable quota, and the domestic organizations, because of political interference by labor unions and an inelasticity in adjusting production, sales and prices to fluctuations in market conditions. On the other hand, resort to vertical consolidations has proved ineffective because of the technical difficulties and the heavy capital requirements of unified management of a wide diversity of industrial activities.

Calendar "Reform"?

CONSIDERABLE publicity has been given to an effort being made by certain interested parties to change the basis of the Gregorian calendar from the twelve months which we have known for many centuries to thirteen months. It is proposed that each of the thirteen months contain twenty-eight days, that each start on Sunday and end on "tub night" and that in all cases the corresponding day of every month be the same day of the week. Allowance is made for the extra day each year (52 weeks represent only 364 days) by inserting that day at the end of the thirteenth month. It is to be permitted to belong to no month and to no week; it would appear between Saturday and Sunday, without having any day name. A further extra day would have to be inserted somewhere in the year, whenever leap-year occurs.

Those who advocate this drastic upsetting of all our preconceived notions of time aver that it would simplify bookkeeping and payrolls, and would equalize monthly budgets. They point to the fact that some hundreds of business institutions today are carrying

much of their accounting work on the four-week basis and infer, or even eagerly claim, that others could do so with profit.

If it is a question of comparing performance of one month with the next, no such interference with our habits and customs is necessary. Already we have machinery for this purpose in the shape of daily averages. These have been used for many years in connection with pig iron and steel ingot production and are used also for coal mining and other activities of great variety. They give a picture of relative activity just as good as can be obtained by the proposed departure.

If, on the other hand, it is a question of providing for a definite period in the future in the way of budgets and expenses, labor and the like, that could be achieved with much greater regularity in the month lengths than we now have and without any such drastic upheaval. It would be perfectly feasible to lengthen February by two days through the expedient of taking one day from January and one from March. If this were done and February still remained the leap-year month, we should have 12 months none of which would exceed 31 days and none fall short of 30 days. Five months each year (six in leap-year) would contain one day more than the others.

One great advantage of this suggested scheme, compared with that for thirteen months, would be that

we still could divide the year into halves and quarters, without bisecting or quadrisecting any month. And halves and quarters of the year, for most business purposes, are far more important than is the matter of having every month start on a Sunday. This method would preserve all of our present quarters with their present lengths without change. It would afford us all the uniformity of month length that business can legitimately demand, and it can be made without upsetting any of our established reckonings and ingrained habits.

Correspondence

"Ferritic," Rather Than "Austenitic"

To the Editor: I would like to call your attention to a misstatement on page 1572 of your Dec. 20, 1928, issue in an article entitled "Tool Alloys Containing No Carbon." The second paragraph contains the following statement: "An alloy containing 7 to 9 per cent is permanently austenitic and cannot be hardened or tempered by any heat treatment. Similar changes in the transformation temperature of pure iron are caused by other metals; permanently austenitic alloys are formed with high chromium, silicon, tin, vanadium or molybdenum."

The use of the word "austenitic" is incorrect, and the proper wording should be "ferritic" or "alpha phase."

W. E. GRIFFITHS,
Metallurgist, Duraloy Co.

Pittsburgh.

Experimental Tin Strip Mill at Sparrows Point

The installation of a tin strip mill at the Sparrows Point plant of the Bethlehem Steel Co., mentioned at some length on page 175 of *THE IRON AGE* of Jan. 10, consists of a single roll stand to be used experimentally to familiarize the Bethlehem company with its possibilities. It is announced that there is no immediate possibility of commercial operation. The machine is one built by the Cold Metal Process Co., Youngstown, Ohio, for use in a rolling mill under license agreement.

Edward D. Adams Honored By Belgian Government

As a mark of appreciation for the memorial carillon and clock placed by 16 national American engineering societies in the tower of the new Louvain Library in Belgium, Edward Dean Adams, chairman of the committee on war memorial to American engineers of the United Engineering Society, has been presented with the insignia of Commander of the Order of the Crown of Belgium. The presentation was made by Prince Albert de Ligne, Belgian ambassador to the United States, at a dinner at the University Club, New York, on Jan. 7, at which Roy V. Wright, president of the United Engineering Society, presided. The company included officers of the national engineering societies and other distinguished members of the engineering profession. The principal

address was made by William H. Onken, senior editor of *Electrical World* and one of the delegates of the American Institute of Electrical Engineers to the Louvain dedication held on July 4, 1928.

A. M. Byers Co. Orders 25 Traveling Cranes

The A. M. Byers Co., Pittsburgh, has just placed order for 25 electric overhead traveling cranes at capacities ranging from 5 to 30 tons with the Alliance Machine Co., Alliance, Ohio. All but two or three cranes are for installation at the company's new plant at Ambridge, Pa. This is one of the largest crane orders ever placed in the Pittsburgh district.

New England Foundrymen Elect Officers

The thirty-third anniversary of the New England Foundrymen's Association, held Wednesday evening, Jan. 9, at the Exchange Club, Boston, was devoted to entertainment and the election of officers for the ensuing year. Prior to a dinner the outgoing officers of the organization held a reception. Immediately following the dinner officers were elected as follows:

Carl H. Neumann, Union Mfg. Co., New Britain, Conn., President; Ernest F. Stockwell, Barbour-Stockwell Co., Cambridge, Mass., vice-president; George H. Gibby, Gibby Foundry Co.,

East Boston, treasurer; Fred F. Stockwell, Barbour-Stockwell Co., secretary. Both Mr. Gibby and Mr. Stockwell have served in their respective positions since the organization of the association.

Charles F. Miller, Universal Wind-ing Co., Providence, R. I., the retiring president, presided. The executive committee of the association now consists of the following: Luther J. Anthony, Glenwood Range Co., Taunton, Mass.; H. A. Lincoln, Sullivan Machinery Co., Claremont, N. H.; William W. Briery, Millbury Steel Foundry, Millbury, Mass.; Warren D. Kent, Grinnell Co., Providence, R. I.; and Charles A. Reed, Rogers, Brown & Crocker Brothers, Inc., Boston.

Building Records Made in 1928

More than \$8,000,000,000 is the estimate made by the Associated General Contractors of America as representing the 1928 volume of construction of all kinds. The increase above 1927 was almost 5 per cent. The year was the seventh in succession to show an increase in volume of construction activities.

In addition to setting a new annual record, four of the 12 months of 1928 were higher than any month in any preceding year, the September total being largest. Eight of the 12 months of the year showed higher totals than had ever been recorded for the corresponding months of any earlier year.

Alan Wood Iron & Steel Co. Sold

Koppers Co. and W. J. Rainey, Inc., Jointly Purchase
Philadelphia Company Which Has Been in One Family
for More Than 100 Years

THE Alan Wood Iron & Steel Co., Widener Building, Philadelphia, one of the oldest American steel companies, which has been owned by succeeding generations of one family for more than 100 years, has been sold to the Koppers Co., Pittsburgh, and W. J. Rainey, Inc., New York.

Announcement was made at the offices of the Wood company in Philadelphia that the sale is subject to ratification by stockholders, but this is regarded as a mere formality. A new corporation will be formed, and it is understood that there will be an exchange of the stock in the Alan Wood Iron & Steel Co. for common and preferred stock in the new company.

Scott Stewart, vice-president W. J. Rainey, Inc., informed THE IRON AGE that a statement would be issued by the new owners when present plans have been completed. Mr. Stewart denied that the acquisition of the Alan Wood company is a part of any steel merger project.

Recent investigations which the Alan Wood company has been making regarding the market for certain steel products not now manufactured by that company have led to the assumption that an expansion of the Wood plant may be contemplated, but on this point no official statement was to be had.

The Alan Wood Iron & Steel Co. is one of the oldest steel companies in the United States, having celebrated its one hundredth anniversary in 1926. The business was founded in 1826 by James Wood and his son Alan, who leased for five years a small water mill near Wilmington, Del., which had been used prior to that time for the manufacture of nail plates. The firm, known as James Wood & Co., bought its iron in the form of plates from American, English and Swedish mills. At that time soft steel bars cost \$125 a ton, while American iron bars were sold at approximately \$100 a ton and Swedish iron bars were \$102.50. The Wood plant employed eight or 10 men who were given their board, costing about \$2 a week, and \$5 a week in cash.

From this humble beginning, the firm grew and in 1832 it erected a mill for rolling iron at Conshohocken, Pa., and soon afterward the Delaware plant was abandoned. The Conshohocken mill started rolling sheets on May 5, 1832, and since that time the partnership and its successor, the Alan Wood Iron & Steel Co., have been prominent in the sheet-making industry.

In 1835, the firm built a shovel factory. On Jan. 1, 1840, James Wood sold his interest to William W. Wood, who continued the business in association with Alan Wood under the title

of Alan Wood & Brothers. One year later this partnership was dissolved and the firm was again conducted by James Wood and his son, Alan, under the original title of James Wood & Son and the Delaware works was again operated.

In the following years there were readjustments of interests in the firm. James Wood retired in 1848, after which the mills were run by his sons, John W., William W., Thomas C. and David L. Wood, and the title of the firm became James Wood & Brothers, and under this name it was incorporated in 1886 with John Wood as president.

In 1857, Alan Wood, in partnership with his brother-in-law, Lewis A. Lukens, grandfather of William W. Lukens, formerly the president of the Alan Wood Iron & Steel Co., started the present Schuylkill Iron Works at Conshohocken.

By 1901 the Alan Wood company had attained an annual production of 25,000 tons of sheets and light plates and was importing some of its raw material in the form of billets. The need of a steel plant was urgent and in the latter part of 1901 the Alan Wood Iron & Steel Co. was incorporated. Richard G. Wood, his son, Alan

D. Wood and brothers, Alan W. and Thomas D. Wood, who had been interested in the W. Dewees Wood Co., which had a plant at McKeesport, Pa., became interested in the Alan Wood Iron & Steel Co. The company purchased land at Ivy Rock, Pa., and began the construction of a steel plant. On July 1, 1903, this company took over Alan Wood & Co., thus combining the Schuylkill Iron Works and the steel plant in one ownership.

The Alan Wood Iron & Steel Co. is capitalized at \$9,000,000, of which common stock of the value of \$6,285,000 and preferred stock of \$675,700 have been issued. At last report, the bonds outstanding amounted to \$3,450,000. The company's physical property consists of two blast furnaces at Swedeland, Pa., with annual capacity of 400,000 tons; a steel plant at Ivy Rock, Pa., consisting of 12 basic open-hearth furnaces, together with a blooming mill, sheared plate mills for rolling material up to 76 in. wide with annual capacity of 125,000 tons, and at Conshohocken, Pa., it has a sheet plant producing approximately 110,000 tons of blue annealed sheets annually. The company also owns a half interest in the Rainey-Wood Coke Co., the other half being owned by W. J. Rainey, Inc., New York.

Present officers of the company are: H. C. Thomas, president; Alan D. Wood, vice-president and treasurer; Charles O. Hadly, vice-president in charge of sales; John W. Logan, secretary and assistant treasurer.

Higher Spanish Duties on Metal Products

WASHINGTON, Jan. 12.—Various kinds of machinery, locomotives, tools and implements, nails, cutlery and other articles of iron and steel have been given moderately increased duties by the Spanish government pending revision of the Spanish tariff, according to the Department of Commerce. The action followed the abolishing of the "consolidated" or treaty rates of duty of the Spanish customs tariff resulting from the denunciation or modification of commercial treaties with European countries.

New Pittsburgh-Memphis Barge Line Ready Feb. 1

Additional facilities for waterborne shipments to Memphis and intermediate river points will be available soon for Pittsburgh district steel companies. The Union Barge Line Corporation, which is a combination of the Old Reliable Towing Co., Pittsburgh, and Union Barge Line, Inc., Parkersburg, W. Va., will inaugurate a Pittsburgh-Memphis service about Feb. 1, and as the business warrants will establish service between Pittsburgh and New Orleans. This line already is taking tin plate from Weirton, W. Va., to Cincinnati. It has a

fleet of five tow-boats and 21 open and six covered barges. Charles T. Campbell is president; Joseph H. Gilmore, vice-president, and H. S. Stuckeman, secretary of the company, offices of which are in the Wabash Building, Pittsburgh.

Metal Mine Accidents in the United States

Accidents in metal mines in the United States in 1926 are dealt with in a 126-page bulletin, No. 292, of the United States Bureau of Mines. The material was prepared by William W. Adams and copies of the bulletin may be obtained from the Government Printing Office, Washington, for 20c.

Fatal accidents are reported at 430 for the year, which was the largest total since 1919, but much smaller than for years preceding that date. The fatality rate, however, was lower than in 1924 or 1922, because the number of workers was greater. The total number injured in the year was 30,350, which was smaller than for the three preceding years and, with the exception of 1921 and 1922, when there were far fewer men employed, was the smallest total since 1914. The accident rate was the lowest since 1920.

Iron and Steel Markets

Await Revival of Automotive Demand

Shipping Orders From Motor Car Builders Slow in
Expanding—Further Slight Gain in Steel Output
—Upward Tariff Revision Forecast

THE iron and steel market is in a trough between buying movements, but production has made further slight gains. Pig iron melters are covered for most of their first quarter requirements, and in various lines of finished steel generous specifying against fourth quarter contracts precludes the need for new purchases at this time.

Commitments in sheets, strips and wire products are equal to four to six weeks' output. Rail mill operations have improved because of larger releases, and tin plate production has reached virtually a capacity rate, both because mills feel safe in stocking material in advance of specifications and because some container manufacturers are willing to take shipments ahead of actual needs.

If steel producers have any cause for concern it is because shipping orders for certain products, particularly automobile steels, are lagging. Releases from motor car builders have not improved as rapidly as had been expected, and it now seems clear that automobile output will not get into full swing until after the annual shows. Meanwhile there has been an accumulation of finished parts and materials, particularly a backing up of body sheets at mills and body plants.

That the delay in automotive programs is only of temporary import is indicated by the fact that a number of motor car companies have placed large orders for hot-rolled strip steel at prevailing quotations, after having postponed buying in the hope of securing concessions.

Instances of overbuying—for example, by plate, shape and bar consumers in the Pittsburgh district and pig iron melters at Chicago—are too infrequent to be significant.

That the market situation, by and large, is still highly satisfactory is attested by the momentum of output, which has carried the rate at Chicago to 88 per cent of ingot capacity, compared with 87 per cent a week ago, and the average in the Greater Pittsburgh area to 85 per cent, compared with a recent range of 80 to 85 per cent.

The continued rise in scrap, with heavy melting steel at Pittsburgh up another 25c. to \$19.25 a ton, has thus far failed to have its customary strengthening effect on merchant pig iron prices. Steel producers

still have surplus iron for sale, but whether this is due to increased pig iron output, an expected recession in steel production or a feeling that present scrap prices will be short-lived is not yet clear. That there is a liberal supply of Valley pig iron compared with current demand is shown by the fact that it is penetrating as far west as Indiana and Michigan.

An upward revision of iron and steel duties, and therefore one that should not disturb business, is forecast by testimony at hearings on the metals schedule of the tariff. Requests thus far made call for a duty of \$3 a ton on pig iron in place of the present rate of \$1.12½, and for further protection on tool steel, wire rope, wire netting, alloy steel sheets and wire. A feature of the testimony of Chairman Topping of the Republic Iron & Steel Co. was a recommendation that ad valorem rates be based on domestic wholesale prices rather than on foreign valuations.

Large engineering projects and pipe lines continue to be leading outlets for steel. A Milwaukee fabricator has booked 44,000 tons of 16 and 20-in. pipe for a 200-mile gas line to be laid by the Pacific Gas & Electric Co. Two Pittsburgh mills have divided 42,000 tons of 8 and 10-in. pipe for an oil line from Panova, Okla., to Griffith, Ind., for the Prairie Pipe Line Co.

Pending work includes 25,000 tons for a bridge across Carquinez Straits, San Francisco, the largest structural project ever up for bids on the Pacific Coast. Tenders have been asked on 14,000 tons of structural shapes for the Brooklyn subway, raising the total of pending New York subway work to 55,000 tons.

Ship steel demand is swelled by the placing of three Lake ore vessels, calling for 5000 tons of plates and shapes each.

Railroad buying is featured by the placing of 3300 cars by the Santa Fe, in addition to that line's purchase of 750 cars a week ago. The New Haven has been authorized to build approximately 1700 cars in its own shops, and the Pere Marquette has inquired for 1400 cars. The Nickel Plate has placed contracts for 23,000 tons of rails and the Illinois Central and the St. Paul are in the market for a total of 60,000 tons.

THE IRON AGE composite prices are unchanged, that for finished steel at 2.391c. a lb. and that for pig iron at \$18.46 a ton.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At Date, One Week, One Month, and One Year Previous

| Pig Iron, Per Gross Ton: | Jan. 15, 1929 | Jan. 8, 1929 | Dec. 18, 1928 | Jan. 17, 1928 |
|---------------------------------|---------------|--------------|---------------|---------------|
| No. 2 foundry, Philadelphia.... | \$21.26 | \$21.26 | \$21.26 | \$20.26 |
| No. 2, Valley furnace..... | 17.50 | 17.50 | 17.50 | 17.25 |
| No. 2, Southern, Cin'ti..... | 20.19 | 20.19 | 20.19 | 19.69 |
| No. 2, Birmingham..... | 16.50 | 16.50 | 16.50 | 16.00 |
| No. 2 foundry, Chicago*..... | 20.00 | 20.00 | 20.00 | 18.50 |
| Basic, del'd eastern Pa..... | 19.75 | 19.75 | 20.25 | 19.50 |
| Basic, Valley furnace..... | 17.50 | 17.50 | 17.50 | 17.00 |
| Valley Bessemer, del'd P'gh.... | 20.01 | 20.01 | 20.01 | 19.26 |
| Malleable, Chicago*..... | 20.00 | 20.00 | 20.00 | 18.50 |
| Malleable, Valley..... | 18.00 | 18.00 | 18.25 | 17.25 |
| Gray forge, Pittsburgh..... | 18.76 | 18.76 | 18.76 | 18.51 |
| L. S. charcoal, Chicago..... | 27.04 | 27.04 | 27.04 | 27.04 |
| Ferromanganese, furnace..... | 105.00 | 105.00 | 105.00 | 100.00 |

| Rails, Billets, Etc., Per Gross Ton: | Jan. 15, 1929 | Jan. 8, 1929 | Dec. 18, 1928 | Jan. 17, 1928 |
|--------------------------------------|---------------|--------------|---------------|---------------|
| O.-h. rails, heavy, at mill.... | \$43.00 | \$43.00 | \$43.00 | \$43.00 |
| Light rails at mill..... | 36.00 | 36.00 | 36.00 | 36.00 |
| Bess. billets, Pittsburgh..... | 33.00 | 33.00 | 33.00 | 33.00 |
| O.-h. billets, Pittsburgh..... | 33.00 | 33.00 | 33.00 | 33.00 |
| O.-h. sheet bars, P'gh..... | 34.00 | 34.00 | 33.00 | 34.00 |
| Forging billets, P'gh..... | 38.00 | 38.00 | 38.00 | 38.00 |
| O.-h. billets, Phila..... | 38.30 | 38.30 | 38.30 | 38.30 |
| Wire rods, Pittsburgh..... | 42.00 | 42.00 | 42.00 | 42.00 |
| | Cents | Cents | Cents | Cents |
| Skelp, grvd. steel, P'gh, lb.... | 1.90 | 1.90 | 1.90 | 1.80 |

| Finished Iron and Steel, Per Lb. to Large Buyers: | Jan. 15, 1929 | Jan. 8, 1929 | Dec. 18, 1928 | Jan. 17, 1928 |
|---|---------------|--------------|---------------|---------------|
| Iron bars, Philadelphia..... | 2.12 | 2.12 | 2.12 | 2.12 |
| Iron bars, Chicago..... | 2.00 | 2.00 | 2.00 | 1.90 |
| Steel bars, Pittsburgh..... | 1.90 | 1.90 | 1.90 | 1.80 |
| Steel bars, Chicago..... | 2.00 | 2.00 | 2.00 | 1.90 |
| Steel bars, New York..... | 2.24 | 2.24 | 2.24 | 2.14 |
| Tank plates, Pittsburgh..... | 1.90 | 1.90 | 1.90 | 1.80 |
| Tank plates, Chicago..... | 2.00 | 2.00 | 2.00 | 1.90 |
| Tank plates, New York..... | 2.17½ | 2.17½ | 2.17½ | 2.12½ |
| Beams, Pittsburgh..... | 1.90 | 1.90 | 1.90 | 1.80 |
| Beams, Chicago..... | 2.00 | 2.00 | 2.00 | 1.90 |
| Beams, New York..... | 2.14½ | 2.14½ | 2.14½ | 2.09½ |
| Steel hoops, Pittsburgh..... | 2.10 | 2.10 | 2.10 | 2.20 |

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

| Sheets, Nails and Wire, Per Lb. to Large Buyers: | Jan. 15, 1929 | Jan. 8, 1929 | Dec. 18, 1928 | Jan. 17, 1928 |
|--|---------------|--------------|---------------|---------------|
| Sheets, black, No. 24, P'gh.... | 2.85 | 2.85 | 2.85 | 2.80 |
| Sheets, black, No. 24, Chicago | | | | |
| dist. mill..... | 2.95 | 2.95 | 2.95 | 3.00 |
| Sheets, galv., No. 24, P'gh.... | 3.60 | 3.60 | 3.60 | 3.65 |
| Sheets, galv., No. 24, Chicago | | | | |
| dist. mill..... | 3.70 | 3.70 | 3.70 | 3.85 |
| Sheets, blue, 9 & 10, P'gh.... | 2.10 | 2.10 | 2.10 | 2.10 |
| Sheets, blue, 9 & 10, Chicago | | | | |
| dist. mill..... | 2.20 | 2.20 | 2.20 | 2.20 |
| Wire nails, Pittsburgh..... | 2.65 | 2.65 | 2.65 | 2.55 |
| Wire nails, Chicago dist. mill.. | 2.70 | 2.70 | 2.70 | 2.55 |
| Plain wire, Pittsburgh..... | 2.50 | 2.50 | 2.50 | 2.40 |
| Plain wire, Chicago dist. mill.. | 2.55 | 2.55 | 2.55 | 2.45 |
| Barbed wire, galv., Pittsburgh.. | 3.30 | 3.30 | 3.30 | 3.25 |
| Barbed wire, galv., Chicago | | | | |
| dist. mill..... | 3.35 | 3.35 | 3.35 | 3.25 |
| Tin plate, 100 lb. box, P'gh.... | \$5.35 | \$5.35 | \$5.25 | \$5.25 |

| Old Material, Per Gross Ton: | Jan. 15, 1929 | Jan. 8, 1929 | Dec. 18, 1928 | Jan. 17, 1928 |
|---------------------------------|---------------|--------------|---------------|---------------|
| Heavy melting steel, P'gh.... | \$19.25 | \$19.00 | \$18.00 | \$15.00 |
| Heavy melting steel, Phila.... | 16.00 | 16.00 | 15.00 | 13.50 |
| Heavy melting steel, Ch'go.... | 14.75 | 14.75 | 14.50 | 12.50 |
| Carwheels, Chicago..... | 14.00 | 14.00 | 14.00 | 14.00 |
| Carwheels, Philadelphia..... | 16.50 | 16.50 | 16.50 | 15.50 |
| No. 1 cast, Pittsburgh..... | 16.00 | 16.00 | 14.50 | 14.50 |
| No. 1 cast, Philadelphia..... | 16.25 | 16.25 | 16.25 | 16.00 |
| No. 1 cast, Ch'go (net ton).... | 15.75 | 15.75 | 15.50 | 14.50 |
| No. 1 RR. wrot., Phila..... | 15.50 | 15.50 | 15.50 | 15.25 |
| No. 1 RR. wrot., Ch'go (net)... | 13.25 | 13.25 | 13.25 | 11.00 |

| Coke, Connellsville, Per Net Ton at Oven: | Jan. 15, 1929 | Jan. 8, 1929 | Dec. 18, 1928 | Jan. 17, 1928 |
|---|---------------|--------------|---------------|---------------|
| Furnace coke, prompt..... | \$2.75 | \$2.75 | \$2.75 | \$2.75 |
| Foundry coke, prompt..... | 3.75 | 3.75 | 3.75 | 3.75 |

| Metals, Per Lb. to Large Buyers: | Jan. 15, 1929 | Jan. 8, 1929 | Dec. 18, 1928 | Jan. 17, 1928 |
|-----------------------------------|---------------|--------------|---------------|---------------|
| Lake copper, New York..... | 16.87½ | 16.87½ | 16.12½ | 14.25 |
| Electrolytic copper, refinery.... | 16.50 | 16.50 | 15.75 | 13.87½ |
| Zinc, St. Louis..... | 6.35 | 6.35 | 6.35 | 5.62½ |
| Zinc, New York..... | 6.70 | 6.70 | 6.70 | 5.97½ |
| Lead, St. Louis..... | 6.50 | 6.50 | 6.35 | 6.30 |
| Lead, New York..... | 6.65 | 6.65 | 6.50 | 6.50 |
| Tin (Strait), New York..... | 49.00 | 49.87½ | 49.62½ | 54.25 |
| Antimony (Asiatic), N. Y..... | 9.50 | 9.60 | 9.87½ | 11.00 |

Pittsburgh

Steel Specifications Lagging in Some Lines But Operations Remain High—Large Pipe Line Orders Placed

PITTSBURGH, Jan. 15.—The iron and steel situation has many cross currents, but the general picture remains favorable. Against the fact that the general average of ingot production in this and nearby districts has risen to about 85 per cent as a result of the heavier operation in the Youngstown district is a fairly common complaint that specifications are not coming out as freely as was expected. Mill order books are good in all products except lapwelded pipe. In the lighter products, like sheets, strips and tin plate, the mills can look ahead at least four weeks in active specifications and the rail order book is as imposing as usual at this time of the year. The release of both rails and tin plate, however, is on a monthly basis, and, if production is maintained steadily at a high rate, it is partly due to the confidence of the steel companies that production will be wanted.

There seem to be some cases where buyers have exceeded in purchases their actual needs, and this is reflected now in a none too active market in bars, plates and shapes. Steel makers feel cheerful about the prospects of improved railroad buying. On the other hand, structural lettings are not expanding as rapidly as expected. The automotive industry is taking steel well, but the complaint of laggard specifications is as common among steel companies serving that industry as among those which do not.

Nails and wire products are moving well on old orders, but the question arises as to when the mills can profit much from price advances, particularly on nails, since so many distributors have loaded up at the former prices. At the same time, mills are finding little trouble in securing first quarter contracts at the new prices, and buyers are voicing little opposition to a reclassification that takes many of them to a higher price basis.

Scrap prices have risen further in the week, but this strength does not

seem to be doing the pig iron market much good, as many had expected. Steel makers evidently do not look upon scrap market conditions as anything more than temporary. They still have iron for open market sale. It has come to light that a sale of 25,000 tons of basic iron was made by one steel company to another at less than what has been regarded as the market price. There is some strength in furnace coke, but fuel prices generally remain weak.

Pig Iron.—The market has taken on a slightly more active aspect. A large user of foundry iron in the week has placed approximately 6000 tons to supplement a contract covering the last half of 1928, on which the buyer carried over enough iron to meet requirements for the first two months of this year. The price, like that on recent sales of more than carload lots, was \$17.50, Valley furnace, for No. 2 grade and \$18 for No. 2X. The Richmond Radiator Co., Uniontown, Pa., is taking prices on 5000 tons of No. 2 foundry iron for second quarter shipment. That inquiry also has brought out a quotation of \$17.50, Valley furnace, for the base grade. The situation in scrap ordinarily would mean some stiffening in mer-

chant iron prices; usually, when scrap is high, the steel companies use more and sell less of their surplus production. The prospect of sales of basic iron to a large local consumer is dimmed by the fact that this consumer a few weeks ago bought 25,000 tons at less than the market price and that tonnage will supply the buyer's requirements for at least 90 days.

Prices per gross ton, f.o.b. Valley furnace:

| | |
|----------------------------|------------------|
| Basic | \$17.50 |
| Bessemer | \$18.25 to 18.50 |
| Gray forge | 17.00 to 17.50 |
| No. 2 foundry | 17.50 to 18.00 |
| No. 3 foundry | 17.00 to 17.50 |
| Malleable | 18.00 to 18.50 |
| Low phos., copper free.... | 26.50 to 27.00 |

Freight rate to Pittsburgh or Cleveland district, \$1.76.

Semi-Finished Steel.—Good movement of billets, slabs and sheet bars is reported in keeping with the fact that, except for interruptions occasioned by lack of crews due to the influenza epidemic, sheet, tin plate and strip mills are heavily engaged and there are obligations that indicate practically full operations until well into February. Most of the sheet bars currently moving are on last quarter of 1928 contracts and carry a price of \$33, Pittsburgh and Youngstown, or \$1 a ton less than that named in contracts for this quarter. Wire rods are moving steadily at \$42, base Pittsburgh or Cleveland. Skelp requirements are light and that fact, coupled with a rather soft market in plates, means some price weakness. Little skelp is moving at more than 1.90c., Pittsburgh, and that price is subject to shading to the so-called preferred buyers.

Bars, Plates and Shapes.—Bars are moving well, but specifications for structural shapes lag. Fabricated steel lettings, at least in this part of the country, do not bulk large, while plate tonnage leaves something to be desired in spite of the improvement in railroad car buying and a fairly large number of river barge awards. Bars are holding well at 1.90c. to 1.95c., base Pittsburgh, with occasional sales to small buyers at 2c., base, but on structural shapes 1.90c. is the ruling price and on plates that price is all

that appears possible to obtain on carload lots.

Rails and Track Supplies.—Mills in this area now are well supplied with orders for rails and track supplies; rails are moving well. Light-section rails and small spikes still are dull. Prices are steady.

Wire Products.—Makers have modified the sales plan for wire nails and the other wire products which are sold largely through the jobbing trade. When the new arrangement was first announced last month, three distinct classifications of buyers were named—the large jobbers, the small jobbers and the retailers. To these groups is now added the consumer, whose classification as to price is the same as for the small jobber, whereas originally the consumer was to be asked to pay the same price as the retailer. The price for nails this quarter to the large jobber is \$2.65 per keg, base Pittsburgh or Cleveland, while the price to the small jobber and consumer is \$2.70, and the price to the retailer is \$2.75. Most jobbers took advantage of the lower prices in the fourth quarter. In nails, at least, it will be some time before they will have to specify on this quarter's contracts, and the test of the new prices waits on the exhaustion of low-priced stocks.

Tubular Goods.—Seamless pipe and welded line pipe continue to provide the bulk of the tonnage for local producers. The National Tube Co. and another local manufacturer will furnish 200 miles of 12-in. and 300 miles of 8-in. pipe for an oil line for the Prairie Pipe Line Co., paralleling its present line from Panova, Okla., to Griffith, Ind. The tonnage in this order is approximately 42,000. The Pacific Coast Gas & Electric Co. has placed 150 miles of 20-in. and 50 miles of 16-in. line pipe, amounting to 44,000 tons with A. O. Smith Corporation, Milwaukee. Lapwelded pipe, outside of line pipe, is very dull, and there is only a moderately active market in butt welded pipe.

Sheets.—Increased releases by the motor car builders stand out. Large makers of body sheets, who started

the year with at least four weeks' business in sight, now are well committed through next month. Automobile builders, however, give no evidence of fear about being able to get supplies when they are wanted and have not indicated their March requirements, although the sheet makers say that six weeks is none too long a time to be allowed for the production of body sheets. In the common finishes, specifications are heavier than they have been. Mill operations are almost at full physical capacity this week, partly as a result of abatement of the losses of mill crews due to the influenza epidemic and also to make up the tonnage lost when so many men were off.

Tin Plate.—Mill operations remain at full physical capacity, or somewhat above 90 per cent of theoretical productivity. Consumption is not as heavy now as it will be later, but full production is encouraged by the fact that container manufacturers are willing to take shipments early and also because the outlook is for a large pack of fruits, vegetables and other perishable foods, and tin plate manufacturers feel safe in stocking against future requirements.

Cold-Finished Steel Bars and Shafting.—Makers are well satisfied with the shipments they are making to the automobile parts makers, considering the fact that January rarely shows a big demand from that source. There are no suggestions of deviations from the present price of 2.20c., base Pittsburgh or Chicago.

Hot-Rolled Flats.—Makers of strips have good-sized order books and those making rim stock see as much as two months' full engagement of rolling mills in live orders. But generally, new specifications are not equaling shipments on old orders. A change for the better, however, is expected as motor car builders work into heavier operating schedules. Prices appear to be holding well at recent levels.

Cold-Rolled Strips.—While specifications have not yet struck a strong stride, they are considered as good as could be expected in view of the fact

THE IRON AGE Composite Prices

Finished Steel

Jan. 15, 1929, 2.391c. a Lb.

| | |
|------------------------------|---------|
| One week ago..... | 2.391c. |
| One month ago..... | 2.391c. |
| One year ago..... | 2.314c. |
| 10-year pre-war average..... | 1.689c. |

Based on steel bars, beams, tank plates, wire, nails, black pipe and black sheets. These products make 87 per cent of the United States output of finished steel.

| | High | | Low | |
|------|---------|----------|---------|---------|
| 1928 | 2.391c. | Dec. 11: | 2.314c. | Jan. 3 |
| 1927 | 2.453c. | Jan. 4: | 2.293c. | Oct. 25 |
| 1926 | 2.453c. | Jan. 5: | 2.403c. | May 18 |
| 1925 | 2.560c. | Jan. 6: | 2.396c. | Aug. 18 |
| 1924 | 2.789c. | Jan. 15: | 2.460c. | Oct. 14 |
| 1923 | 2.824c. | Apr. 24: | 2.446c. | Jan. 2 |

Pig Iron

Jan. 15, 1929, \$18.46 a Gross Ton

| | |
|------------------------------|---------|
| One week ago..... | \$18.46 |
| One month ago..... | 18.46 |
| One year ago..... | 17.67 |
| 10-year pre-war average..... | 15.72 |

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

| | High | | Low | |
|------|---------|----------|---------|---------|
| 1928 | \$18.59 | Nov. 27: | \$17.04 | July 24 |
| 1927 | 19.71 | Jan. 4: | 17.54 | Nov. 1 |
| 1926 | 21.54 | Jan. 5: | 19.46 | July 13 |
| 1925 | 22.50 | Jan. 13: | 18.96 | July 7 |
| 1924 | 22.88 | Feb. 26: | 19.21 | Nov. 3 |
| 1923 | 30.86 | Mar. 20: | 20.77 | Nov. 20 |

Mill Prices of Finished Iron and Steel Products

Iron and Steel Bars

| Soft Steel | |
|---------------------------------|-------------------|
| | Base per Lb. |
| F.o.b. Pittsburgh mill..... | 1.90c. to 1.95c. |
| F.o.b. Chicago..... | 2.00c. to 2.10c. |
| Del'd Philadelphia..... | 2.22c. to 2.32c. |
| Del'd New York..... | 2.24c. to 2.34c. |
| Del'd Cleveland..... | 1.92½c. to 1.95c. |
| F.o.b. Cleveland..... | 1.90c. to 1.95c. |
| F.o.b. Lackawanna..... | 2.00c. to 2.10c. |
| F.o.b. Birmingham..... | 2.15c. |
| C.i.f. Pacific ports..... | 2.35c. |
| F.o.b. San Francisco mills..... | 2.35c. to 2.40c. |

Billet Steel Reinforcing

| | |
|---|--------|
| F.o.b. Pittsburgh mills, 40, 50, 60-ft..... | 2.00c. |
| F.o.b. Pittsburgh mills, cut lengths..... | 2.25c. |
| F.o.b. Birmingham, mill lengths..... | 2.15c. |

Rail Steel

| | |
|--|------------------|
| F.o.b. mills east of Chicago dist..... | 1.85c. to 1.95c. |
| F.o.b. Chicago Heights mill..... | 1.95c. |

Iron

| | |
|--------------------------------------|------------------|
| Common iron, f.o.b. Chicago..... | 2.00c. to 2.10c. |
| Refined iron, f.o.b. P'gh mills..... | 2.75c. |
| Common iron, del'd Philadelphia..... | 2.12c. |
| Common iron, del'd New York..... | 2.14c. |

Tank Plates

| | Base per Lb. |
|-----------------------------|--------------------|
| F.o.b. Pittsburgh mill..... | 1.90c. to 1.95c. |
| F.o.b. Chicago..... | 2.00c. to 2.10c. |
| F.o.b. B'mingham..... | 2.15c. |
| Del'd Cleveland..... | 2.09c. to 2.14c. |
| Del'd Philadelphia..... | 2.10c. to 2.20c. |
| F.o.b. Coatesville..... | 2.00c. to 2.10c. |
| F.o.b. Sparrows Point..... | 2.00c. to 2.10c. |
| F.o.b. Lackawanna..... | 2.00c. to 2.10c. |
| Del'd New York..... | 2.17½c. to 2.27½c. |
| C.i.f. Pacific ports..... | 2.20c. to 2.30c. |

Structural Shapes

| | Base per Lb. |
|-----------------------------|--------------------|
| F.o.b. Pittsburgh mill..... | 1.90c. to 1.95c. |
| F.o.b. Chicago..... | 2.00c. to 2.10c. |
| F.o.b. B'mingham..... | 2.15c. |
| F.o.b. Lackawanna..... | 2.00c. to 2.10c. |
| F.o.b. Bethlehem..... | 2.00c. to 2.10c. |
| Del'd Cleveland..... | 2.09c. to 2.14c. |
| Del'd Philadelphia..... | 2.06c. to 2.16c. |
| Del'd New York..... | 2.14½c. to 2.24½c. |
| C.i.f. Pacific ports..... | 2.35c. |

Hot-Rolled Hoops, Bands and Strips

| | Base per Lb. |
|----------------------------------|--------------|
| 6 in. and narrower, P'gh..... | 1.90c. |
| Wider than 6 in., P'gh..... | 1.80c. |
| 6 in. and narrower, Chicago..... | 2.10c. |
| Wider than 6 in., Chicago..... | 2.00c. |
| Cooperage stock, P'gh..... | 2.10c. |
| Cooperage stock, Chicago..... | 2.20c. |

Cold-Finished Steel

| | Base per Lb. |
|--|-------------------|
| Bars, f.o.b. Pittsburgh mill..... | 2.20c. |
| Bars, f.o.b. Chicago..... | 2.20c. |
| Bars, Cleveland..... | 2.25c. |
| Shafting, ground, f.o.b. mill..... | *2.55c. to 3.50c. |
| Strips, P'gh..... | 2.85c. |
| Strips, Cleveland..... | 2.85c. to 2.95c. |
| Strips, del'd Chicago..... | 3.15c. to 3.25c. |
| Strips, Worcester..... | 3.00c. |
| Fender stock, Pittsburgh or Cleveland..... | 4.25c. |

*According to size.

Wire Products

(Carload lots, f.o.b. Pittsburgh and Cleveland, to jobbers and retailers.)

| | Base per Keg |
|--------------------------|------------------|
| Wire nails..... | \$2.65 to \$2.75 |
| Galvanized nails..... | 4.65 to 4.75 |
| Galvanized staples..... | 3.35 to 3.45 |
| Polished staples..... | 3.10 to 3.20 |
| Cement coated nails..... | 2.65 to 2.75 |

| | Base per 100 Lb. |
|--|------------------|
| Bright plain wire, No. 6 to No. 9 gage..... | \$2.50 to \$2.60 |
| Annealed fence wire..... | 2.65 to 2.75 |
| Spring wire..... | 3.50 to 3.60 |
| Galv'd wire, No. 9..... | 3.10 to 3.20 |
| Barbed wire, galv'd..... | 3.30 to 3.40 |
| Barbed wire, painted..... | 3.05 to 3.15 |
| Woven wire fence (per net ton to retailers)..... | 65.00 |

Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Birmingham mill prices \$3 a ton higher; Worcester Mass., (wire) mill \$3 a ton higher on production of that plant; Duluth, Minn., mill \$2 a ton higher; Anderson, Ind., \$1 higher.

Cut Nails

| | Per 100 Lb. |
|---|-------------|
| Carloads, Wheeling or Reading..... | \$2.70 |
| Less carloads, Wheeling or Reading..... | 2.80 |

Sheets

Blue Annealed

| | Base per Lb. |
|---|--------------|
| Nos. 9 and 10, f.o.b. P'gh..... | 2.10c. |
| Nos. 9 and 10, f.o.b. Chicago dist..... | 2.20c. |
| Nos. 9 and 10, del'd Cleveland..... | 2.29c. |
| Nos. 9 and 10, del'd Philadelphia..... | 2.42c. |
| Nos. 9 and 10, f.o.b. Birmingham..... | 2.25c. |

Box Annealed One Pass Cold Rolled

| | |
|--|--------|
| No. 24, f.o.b. Pittsburgh..... | 2.85c. |
| No. 24, f.o.b. Chicago dist. mill..... | 2.95c. |
| No. 24, del'd Cleveland..... | 3.04c. |
| Nos. 24, del'd Philadelphia..... | 3.17c. |
| No. 24, f.o.b. Birmingham..... | 3.00c. |

Metal Furniture Sheets

| | |
|---------------------------------------|--------|
| No. 24, f.o.b. P'gh, No. 1 grade..... | 4.00c. |
| No. 24, f.o.b. P'gh, No. 2 grade..... | 3.80c. |

Galvanized

| | |
|--|--------|
| No. 24, f.o.b. Pittsburgh..... | 3.60c. |
| No. 24, f.o.b. Chicago dist. mill..... | 3.70c. |
| No. 24, del'd Cleveland..... | 3.78c. |
| No. 24, del'd Philadelphia..... | 3.92c. |
| No. 24, f.o.b. Birmingham..... | 3.75c. |

Tin Mill Black Plate

| | |
|--|--------|
| No. 28, f.o.b. Pittsburgh..... | 3.00c. |
| No. 28, f.o.b. Chicago dist. mill..... | 3.10c. |

Automobile Body Sheets

| | |
|--------------------------------|--------|
| No. 20, f.o.b. Pittsburgh..... | 4.10c. |
|--------------------------------|--------|

Long Ternes

| | |
|---|--------|
| No. 24, 8-lb. coating, f.o.b. mill..... | 4.00c. |
|---|--------|

Vitreous Enameling Stock

| | |
|--------------------------------|--------|
| No. 24, f.o.b. Pittsburgh..... | 3.90c. |
|--------------------------------|--------|

Tin Plate

| | Per Base Box |
|---|--------------|
| Standard cokes, f.o.b. P'gh district mills..... | \$5.35 |
| Standard cokes, f.o.b. Gary..... | 5.45 |

Terne Plate

(F.o.b. Morgantown or Pittsburgh)

(Per Package, 20 x 28 in.)

| | |
|----------------------------|-----------------------------|
| 8-lb. coating I.C. \$11.20 | 25-lb. coating I.C. \$16.70 |
| 15-lb. coating I.C. 14.00 | 30-lb. coating I.C. 17.75 |
| 20-lb. coating I.C. 15.30 | 40-lb. coating I.C. 19.85 |

Alloy Steel Bars

(F.o.b. maker's mill)

| Alloy Quality Bar Base, 2.65c. to 2.75c. per Lb. | |
|--|--------------------|
| S.A.E. Series Numbers | Alloy Differential |

| | |
|--|--------|
| 2000 (¼% Nickel)..... | \$0.25 |
| 2100 (1¼% Nickel)..... | 0.55 |
| 2300 (3¼% Nickel)..... | 1.50 |
| 2500 (5% Nickel)..... | 2.25 |
| 3100 Nickel Chromium..... | 0.55 |
| 3200 Nickel Chromium..... | 1.35 |
| 3300 Nickel Chromium..... | 3.80 |
| 3400 Nickel Chromium..... | 3.20 |
| 4100 Chromium Molybdenum (0.15 to 0.25 Molybdenum)..... | 0.50 |
| 4100 Chromium Molybdenum (0.25 to 0.40 Molybdenum)..... | 0.70 |
| 4600 Nickel Molybdenum (0.20 to 0.30 Molybdenum, 1.25 to 1.75 Nickel)..... | 1.05 |
| 5100 Chromium Steel (0.60 to 0.90 Chromium)..... | 0.35 |
| 5100 Chromium Steel (0.80 to 1.10 Chromium)..... | 0.45 |
| 5100 Chromium Spring Steel..... | 0.20 |
| 6100 Chromium Vanadium Bars..... | 1.20 |
| 6100 Chromium Vanadium Spring Steel..... | 0.95 |
| 9250 Silicon Manganese Spring Steel (flats)..... | 0.25 |
| Rounds and squares..... | 0.50 |
| Chromium Nickel Vanadium..... | 1.50 |
| Carbon Vanadium..... | 0.95 |

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is ¾c. per lb. higher. For billets 4 x 4 to 10 x 10 in., the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 down to and including 2½ in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

Slabs with sectional area of 16 in. or over carry the billet price; slabs with sectional area of 12 in. to 16 in. carry a \$5 extra above the billet price and slabs with a sectional area under 12 in. carry the bar price.

Band sizes are 40c. per 100 lb. higher.

Rails

| | Per Gross Ton |
|--|---------------|
| Standard, f.o.b. mill..... | \$43.00 |
| Light (from billets), f.o.b. mill..... | 36.00 |
| Light (from rail steel), f.o.b. mill..... | 34.00 |
| Light (from billets), f.o.b. Ch'go mill..... | 36.00 |

Track Equipment

| | Base per 100 Lb. |
|----------------------------------|------------------|
| Spikes, 9/16 in. and larger..... | \$2.80 |
| Spikes, ¼ in. and smaller..... | 2.80 |
| Spikes, boat and barge..... | 3.00 |
| Tie plates, steel..... | 2.15 |

| | |
|--|----------------------|
| Angle bars..... | \$2.75 |
| Track bolts, to steam railroads..... | \$3.80 to 4.00 |
| Track bolts, to jobbers, all sizes, per 100 count..... | 70 per cent off list |

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio Mills

| Butt Weld | | Iron | |
|------------------------------------|--------|-------------------------------------|---------|
| Inches | Steel | Inches | Galv. |
| 1½..... | 45 19¼ | 1½ and ¾..... | +36 |
| 2..... | 51 25¼ | 2..... | 23 5 |
| 2½..... | 56 42¼ | 2½..... | 28 11 |
| 3..... | 60 48¼ | 3..... | 31 15 |
| 3½..... | 62 50¼ | 3½..... | 35 18 |
| Lap Weld | | Butt Weld, extra strong, plain ends | |
| 2..... | 55 43¼ | 2..... | 23 9 |
| 2½ to 6..... | 59 47¼ | 2½ to 3½..... | 28 13 |
| 7 and 8..... | 56 43¼ | 4 to 6..... | 30 17 |
| 9 and 10..... | 54 42¼ | 7 and 8..... | 29 16 |
| 11 and 12..... | 63 40¼ | 9 to 12..... | 26 11 |
| Lap Weld, extra strong, plain ends | | Lap Weld, extra strong, plain ends | |
| 1½..... | 41 24¼ | 1½ and ¾..... | +13 +48 |
| 2..... | 47 30¼ | 2..... | 23 7 |
| 2½..... | 53 42¼ | 2½..... | 28 12 |
| 3..... | 58 47¼ | 3..... | 34 18 |
| 3½..... | 60 49¼ | 1 to 2..... | 34 18 |
| 4..... | 61 50¼ | | |
| Lap Weld, extra strong, plain ends | | Lap Weld, extra strong, plain ends | |
| 2..... | 53 42¼ | 2..... | 29 13 |
| 2½ to 4..... | 57 46¼ | 2½ to 4..... | 34 20 |
| 4½ to 6..... | 56 45¼ | 4½ to 6..... | 33 19 |
| 7 to 8..... | 52 39¼ | 7 and 8..... | 31 17 |
| 9 and 10..... | 45 32¼ | 9 to 12..... | 21 8 |
| 11 and 12..... | 44 31¼ | | |

On carloads the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5%, and on galvanized by 1½ points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to jobbers by one point with supplementary discounts of 5 and 2½%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

| Steel | | Charcoal Iron | |
|----------------------|----|----------------------|----|
| 2 in. and 2½ in..... | 40 | 1½ in..... | 1 |
| 2½ in.—2½ in..... | 48 | 1¾ in..... | 8 |
| 3 in..... | 54 | 2 in.—2½ in..... | 13 |
| 3½ in.—3½ in..... | 56 | 2½ in.—2½ in..... | 16 |
| 4 in..... | 59 | 3 in..... | 17 |
| 4½ in. to 6 in..... | 48 | 3½ in. to 3½ in..... | 18 |
| | | 4 in..... | 20 |
| | | 4½ in..... | 21 |

On lots of a carload or more, the above base discounts are subject to a preferential of two fives on steel and of 10 per cent on charcoal iron tubes. Smaller quantities are subject to the following modifications from the base discounts:

Lap Welded Steel—Under 10,000 lb., 6 points under base and one five; 10,000 lb. to carload, 4 points under base and two fives. Charcoal Iron—Under 10,000 lb., 2 points under base; 10,000 lb. to carload, base and one five.

Standard Commercial Seamless Boiler Tubes

| Cold Drawn | | Hot Rolled | |
|-------------------|----|---------------------|----|
| 1 in..... | 63 | 3 in..... | 48 |
| 1½ to 1½ in..... | 55 | 3½ to 3½ in..... | 50 |
| 1¾ in..... | 39 | 4 in..... | 53 |
| 2 to 2½ in..... | 34 | 4½, 5 and 6 in..... | 42 |
| 2½ to 2½ in..... | 42 | | |
| 2 and 2½ in..... | 40 | 3½ to 3½ in..... | 56 |
| 2½ and 2½ in..... | 48 | 4 in..... | 59 |
| 3 in..... | 54 | 4½, 5 and 6 in..... | 48 |

Beyond the above base discounts a preferential discount of 5 per cent is allowed on carload lots. On less than carloads to 10,000 lb. base discounts are reduced 4 points with 5 per cent preferential; on less than 10,000 lb., base discounts are reduced 6 points, with no preferential. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage take mechanical tubes list and discounts.

Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

| | Per Cent Off List |
|---|-------------------|
| Carbon, 0.10% to 0.30%, base (carloads)..... | 55 |
| Carbon, 0.30% to 0.40%, base..... | 50 |
| Plus differentials for lengths over 18 ft. and for commercial exact lengths. Warehouse discounts on small lots are less than the above. | |

Warehouse Prices, f.o.b. Pittsburgh

| | Base per Lb. |
|---|------------------|
| Plates | 3.00c. |
| Structural shapes | 3.00c. |
| Soft steel bars and small shapes | 2.90c. |
| Reinforcing steel bars | 2.75c. |
| Cold-finished and screw stock— | |
| Rounds and hexagons | 3.60c. |
| Squares and flats | 4.10c. |
| Bands | 3.25c. |
| Hoops | 4.25c. |
| Black sheets (No. 24), 25 or more bundles | 3.80c. |
| Galv. sheets (No. 24), 25 or more bundles | 4.55c. |
| Blue ann'd sheets (No. 10), 1 to 10 sheets | 3.45c. |
| Galv. corrug. sheets (No. 28), per square | \$4.43 |
| Spikes, large | 3.40c. |
| Small | 3.80c. to 5.25c. |
| Boat | 3.80c. |
| Track bolts, all sizes, per 100 count, 60 per cent off list | |
| Machine bolts, 100 count, 60 per cent off list | |
| Carriage bolts, 100 count, 60 per cent off list | |
| Nuts, all styles, 100 count, 60 per cent off list | |
| Large rivets, base per 100 lb. | \$3.50 |
| Wire, black soft ann'd, base per 100 lb. | \$3.00 to 3.10 |
| Wire, galv. soft, base per 100 lb. | 3.00 to 3.10 |
| Common wire nails, per keg | 3.00 |
| Cement coated nails, per keg | 3.05 |

that automobile parts makers are not yet increasing their takings. The market is steady at 2.85c. base, but makers want 10c. per 100 lb. more from buyers whose purchases run to small lots and who are exacting as to quality.

Coke and Coal.—Spot offerings of furnace coke have dwindled materially in the past week and producers, who lately had to go as low as \$2.65 per net ton at ovens to move production, have not had to accept business in the past week at less than \$2.75. The market otherwise is without change.

Old Material.—Prices have further advanced in the past week. As much as \$20 is reported to have been paid for one small lot of No. 1 heavy melting steel, while two fairly sizable lots of this grade went at \$19.50. Dealers find it hard to pick up worth-while lots of this grade at less than \$19, and the offering in the January scrap list of the Pennsylvania Railroad is

reported to have been sold at approximately \$19.60, most of it going to Youngstown, but some to Pittsburgh. Compressed sheets appear almost as valuable as No. 1 heavy melting steel, and as much as \$18 has been paid by consumers for bundled sheet sides and ends. In railroad specialties and most other grades, with the possible exception of machine shop turnings, the price trend is higher. The principal local user of machine shop turnings has lately curtailed consumption of them. There is increased resistance to scrap prices on the part of consumers, and the possibility that more pig iron will be used in place of scrap continues to be mentioned. Scrap is not as freely available at this time of the year as at other seasons, and consumption has been heavy at a time when it usually is somewhat faltering.

Prices per gross ton delivered consumers' yards in Pittsburgh and points taking the Pittsburgh district freight rate:

| | |
|--|--------------------|
| Basic Open-Hearth Grades: | |
| No. 1 heavy melting steel | \$19.00 to \$19.50 |
| No. 2 heavy melting steel | 17.50 to 18.00 |
| Scrap rails | 18.50 to 19.00 |
| Compressed sheet steel | 19.00 to 19.25 |
| Bundled sheets, sides and ends | 17.50 to 18.00 |
| Cast iron carwheels | 15.00 to 15.50 |
| Sheet bar crops, ordinary | 19.50 to 20.00 |
| Heavy breakable cast | 15.00 to 15.50 |
| No. 2 railroad wrought | 19.00 to 19.50 |
| Hvy. steel axle turnings | 17.00 to 17.50 |
| Machine shop turnings | 11.50 to 12.00 |
| Acid Open-Hearth Grades: | |
| Railr. knuckles and couplers | 19.50 to 20.00 |
| Railr. coil and leaf springs | 19.50 to 20.00 |
| Roller steel wheels | 19.50 to 20.00 |
| Low phos. billet and bloom ends | 22.00 to 22.50 |
| Low phos. mill plates | 20.50 to 21.00 |
| Low phos. light grades | 19.50 to 20.00 |
| Low phos. sheet bar crops | 20.50 to 21.00 |
| Heavy steel axle turnings | 17.00 to 17.50 |
| Electric Furnace Grades: | |
| Low phos. punchings | 19.50 to 20.00 |
| Hvy. steel axle turnings | 17.00 to 17.50 |
| Blast Furnace Grades: | |
| Short shoveling steel turnings | 12.50 to 13.00 |
| Short mixed borings and turnings | 12.50 to 13.00 |
| Cast iron borings | 12.50 to 13.00 |
| Rolling Mill Grades: | |
| Steel car axles | 21.00 to 22.00 |
| No. 1 railroad wrought | 15.00 to 16.00 |
| Sheet bar crops | 20.00 to 20.50 |
| Cupola Grades: | |
| No. 1 cast | 16.00 to 16.50 |
| Rails 3 ft. and under | 20.50 to 21.00 |

Manganese Ore and Alloys in 1927

Domestic Ore Output Small—American Ferromanganese Expanding—More Used Per Ton of Steel Produced

WASHINGTON, Jan. 15.—Shipments of manganese ore from domestic mines and imports of that product in 1927 showed moderate declines when compared with 1926, as did shipments of ferromanganese from domestic furnaces and imports of that alloy, according to a statistical summary by Dr. J. W. Furness, chief of the minerals division, Department of Commerce. The decreases were ascribed principally to the decrease in the manufacture of steel.

Shipments of manganese ore from domestic mines in 1927 amounted to 44,741 gross tons as against 46,258 tons in 1926, while imports, including

chemical ore, were 622,067 tons, a decrease of 116,000 tons. Shipments of ferromanganese from domestic furnaces in 1927 were 291,056 tons as compared with 330,070 tons the preceding and record year. Imports of ferromanganese in 1927 totaled 45,500 tons as against 59,710 tons in 1926. Dr. Furness pointed out that the increased use of ores low in manganese content in the manufacture of pig iron has not, broadly speaking, affected the consumption of manganese ore or ferromanganese in the manufacture of steel. Domestic shipments of spiegeleisen in 1927 were 80,892 tons as against 82,982 tons, while imports

were 7529 tons and 8783 tons, respectively.

During the five-year period, 1923 to 1927, following the last tariff enactment affecting manganese, Dr. Furness stated, the domestic production of metallurgical ore was 173,371 gross tons and of chemical ore (70 per cent dioxide) 103,967 tons, or a total of 277,338 tons. During this period the imports of manganese ore approximated 2,899,000 tons. The large measure of dependence of the United States upon foreign resources for its needs of manganese ore is thus evident, it was declared.

Two Tons of Ore for One Ton of Ferroalloy

Regarding ferromanganese, it was stated that in 1927 the ratio of the domestic manufactured product to the output of steel was larger than in any previous year. The amount of crude ore of foreign origin utilized in the manufacture of one ton of ferromanganese was 1.914 tons and of ore of domestic and foreign origin 2 tons.

"Since the tariff enactment of 1922, the domestic manufacture of ferromanganese has been expanding," said Dr. Furness. "During 1927 a small tonnage of ferromanganese was exported. The degree of dependence of the United States upon imported alloys has in the last few years been decreasing. In fact, the United States now is able to meet competition with foreign manufacturers in their home markets."

Offer to Build Youngstown, Ohio River Link

WASHINGTON, Jan. 15.—A plan whereby the Pennsylvania and the New York Central would provide a rail-and-water route for coal and steel and possible other traffic between Youngstown and the Ohio River as a substitute for the one proposed by the Pittsburgh, Lisbon & Western, has been presented to the Interstate Commerce Commission by the two carriers.

Albert Ward, attorney for the Pennsylvania, and Clyde Brown, for the Pittsburgh & Lake Erie, a part of the New York Central system, said these trunk lines had worked out plans whereby one or the other would provide facilities for the transfer to and from the Ohio River, thereby creating a rail-and-water route and that they were prepared to grant trackage rights to enable each other and the Baltimore & Ohio, the third trunk line serving Youngstown but not reaching the Ohio River near the proposed point of transfer, to participate in the rail-and-water route transportation. Mr. Brown doubted whether they could offer rates that would satisfy the shippers.

The Billings & Spencer Co., Hartford, Conn., will supply 21 of its new type drop hammers to the International Harvester Co.

Semi-Finished Steel, Raw Materials, Bolts and Rivets

Mill Prices of Semi-Finished Steel

Billets and Blooms

| | Per Gross Ton |
|---|------------------|
| Rerolling, 4 in. and under 10 in., Pittsburgh | \$33.00 |
| Rerolling, 4 in. and under 10 in., Youngstown | 33.00 |
| Rerolling, 4 in. and under 10 in., Cleveland | \$33.00 to 34.00 |
| Rerolling, 4 in. and under 10 in., Chicago | 35.00 |
| Forging quality, Pittsburgh | 38.00 |

Sheet Bars

(Open hearth or Bessemer)

| | Per Gross Ton |
|------------|---------------|
| Pittsburgh | \$34.00 |
| Youngstown | 34.00 |
| Cleveland | 34.00 |

Slabs

(8 in. x 2 in. and under 10 in. x 10 in.)

| | Per Gross Ton |
|------------|---------------|
| Pittsburgh | \$33.00 |
| Youngstown | 33.00 |
| Cleveland | 33.00 |

Skelp

(F.o.b. Pittsburgh or Youngstown)

| | Per Lb. |
|-----------|------------------|
| Grooved | 1.90c. to 1.95c. |
| Universal | 1.90c. to 1.95c. |
| Sheared | 1.90c. to 1.95c. |

Wire Rods

(Common soft, base)

| | Per Gross Ton |
|------------|---------------|
| Pittsburgh | \$42.00 |
| Cleveland | 42.00 |
| Chicago | 43.00 |

Prices of Raw Material

Ores

Lake Superior Ores, Delivered Lower Lake Ports

| | Per Gross Ton |
|--|--------------------|
| Old range Bessemer, 51.50% iron | \$4.55 |
| Old range non-Bessemer, 51.50% iron | 4.40 |
| Mesabi Bessemer, 51.50% iron | 4.40 |
| Mesabi non-Bessemer, 51.50% iron | 4.25 |
| High phosphorus, 51.50% iron | 4.15 |
| Foreign Ore, c.i.f. Philadelphia or Baltimore | Per Unit |
| Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algerian | 10.00c. |
| Iron ore, low phos., Swedish, average 68% iron | 10.00c. |
| Iron ore, basic Swedish, average 65% iron | 9.00c. |
| Manganese ore, washed, 52% manganese, from the Caucasus | 36c. to 38c. |
| Manganese ore, Brazilian, African or Indian, basic 50% | 35c. to 37c. |
| Tungsten ore, high grade, per unit, in 60% concentrates | \$12.00 to \$12.50 |
| Chrome ore, 45 to 50% Cr ₂ O ₃ , crude, c.i.f. Atlantic seaboard | \$22.00 to \$24.00 |
| Molybdenum ore, 85% concentrates of MoS ₂ , delivered | 50c. to 55c. |

Coke

| | Per Net Ton |
|---|----------------|
| Furnace, f.o.b. Connellsville prompt | \$2.75 |
| Foundry, f.o.b. Connellsville prompt | \$3.50 to 4.85 |
| Foundry, by-product, Ch'go ovens | 8.00 |
| Foundry, by-product, New England, del'd | 11.00 |
| Foundry, by-product, Newark or Jersey City, delivered | 9.00 to 9.40 |
| Foundry, Birmingham | 5.00 |
| Foundry, by-product, St. Louis, f.o.b. ovens | 8.00 |
| Foundry by-prod., del'd St. Louis | 9.00 |

Coal

| | Per Net Ton |
|---|------------------|
| Mine run steam coal, f.o.b. W. Pa. mines | \$1.25 to \$1.75 |
| Mine run coking coal, f.o.b. W. Pa. mines | 1.50 to 1.75 |
| Gas coal, 1/4-in., f.o.b. Pa. mines | 1.90 to 2.00 |
| Mine run gas coal, f.o.b. Pa. mines | 1.65 to 1.75 |
| Steam slack, f.o.b. W. Pa. mines | 70c. to 80c. |
| Gas slack, f.o.b. W. Pa. mines | 90c. to 1.00 |

Ferromanganese

| | Per Gross Ton |
|--|---------------|
| Domestic, 80%, seaboard | \$105.00 |
| Foreign, 80%, Atlantic or Gulf port, duty paid | 105.00 |

Spiegeleisen

| | Per Gross Ton Furnace |
|---------------------|-----------------------|
| Domestic, 19 to 21% | \$31.00 to \$34.00 |
| Domestic, 16 to 19% | 29.00 to 32.00 |

Electric Ferrosilicon

| | Per Gross Ton Delivered |
|-----------|-------------------------|
| 50% | \$83.50 |
| 75% | 130.00 |
| | Per Gross Ton Furnace |
| 10% | \$35.00 |
| 11% | 37.00 |
| | Per Gross Ton Furnace |
| 12% | \$39.00 |
| 14 to 16% | 45.00 |

Bessemer Ferrosilicon

| | Per Gross Ton |
|--------------------------------------|---------------|
| F.o.b. Jackson County, Ohio, Furnace | |
| 10% | \$31.00 |
| 11% | 33.00 |
| | Per Gross Ton |
| 12% | \$35.00 |

Silvery Iron

| | Per Gross Ton |
|--------------------------------------|---------------|
| F.o.b. Jackson County, Ohio, Furnace | |
| 6% | \$24.00 |
| 7% | 25.00 |
| 8% | 26.00 |
| 9% | 27.00 |
| | Per Gross Ton |
| 10% | \$29.00 |
| 11% | 31.00 |
| 12% | 33.00 |

Other Ferroalloys

| | |
|--|------------------|
| Ferrotungsten, per lb., contained metal del'd | 98c. to \$1.05 |
| Ferrocromium, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads | 11.00c. |
| Ferrovandium, per lb. contained vanadium, f.o.b. furnace | \$3.15 to \$3.65 |
| Ferrocobaltititanium, 15 to 18%, per net ton, f.o.b. furnace, in carloads | \$160.00 |
| Ferrophosphorus, electric or blast furnace material, in carloads | 18%, Rockdale |
| Tenn. base, per gross ton | \$91.00 |
| Ferrophosphorus, electric 24%, f.o.b. Aniston, Ala., per gross ton | \$122.50 |

Fluxes and Refractories

Fluorspar

| | Per Net Ton |
|---|------------------|
| Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines | \$18.00 |
| No. 2 lump, Illinois and Kentucky mines | 20.00 |
| Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid | \$18.00 to 19.00 |
| Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2 1/4% silica, f.o.b. Illinois and Kentucky mines | 32.50 |

Fire Clay Brick

| | Per 1000 f.o.b. Works | |
|------------------------------------|-------------------------|---------------------------------|
| | High-Heat Duty Brick | Intermediate Heat Duty Brick |
| Pennsylvania .. | \$43.00 to \$46.00 | \$35.00 to \$38.00 |
| Maryland | 43.00 to 46.00 | 35.00 to 38.00 |
| New Jersey | 50.00 to 65.00 | ..... |
| Ohio | 43.00 to 46.00 | 35.00 to 38.00 |
| Kentucky | 43.00 to 46.00 | 35.00 to 38.00 |
| Missouri | 43.00 to 46.00 | 35.00 to 38.00 |
| Illinois | 43.00 to 46.00 | 35.00 to 38.00 |
| Ground fire clay, per ton | 7.00 | |

Silica Brick

| | Per 1000 f.o.b. Works |
|----------------------|-----------------------|
| Pennsylvania | \$43.00 |
| Chicago | 52.00 |
| Birmingham | 50.00 |
| Silica clay, per ton | \$8.50 to 10.00 |

Magnesite Brick

| | Per Net Ton |
|--|-------------|
| Standard sizes, f.o.b. Baltimore and Chester, Pa. | \$65.00 |
| Grain magnesite, f.o.b. Baltimore and Chester, Pa. | 40.00 |
| Standard size | 45.00 |

Chrome Brick

| | Per Net Ton |
|---------------|-------------|
| Standard size | \$45.00 |

Mill Prices of Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts

Per 100 Pieces

| | Per Cent Off List |
|---|-----------------------------------|
| (F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago) | |
| Machine bolts | 70 |
| Carriage bolts | 70 |
| Lag bolts | 70 |
| Plow bolts, Nos. 1, 2, 3 and 7 heads | 70 |
| Hot-pressed nuts, blank or tapped, square | 70 |
| Hot-pressed nuts, blank or tapped, hexagons | 70 |
| C.p.c. and t. square or hex. nuts, blank or tapped | 70 |
| Washers* | 7.00c. to 6.75c. per lb. off list |

*F.o.b. Chicago, New York and Pittsburgh.
†Bolts with rolled thread up to and including 3/4 in. x 6 in. take 10 per cent lower list prices.

Bolts and Nuts

Per Cent Off List

| | |
|--|-------------------------|
| Semi-finished hexagon nuts | 70 |
| Semi-finished hexagon castellated nuts, S.A.E. | 70 |
| Stove bolts in packages, Pittsburgh | 80, 10 and 5 |
| Stove bolts in packages, Chicago | 80, 10 and 5 |
| Stove bolts in bulk, Pittsburgh | 80, 10, 5 and 2 1/2 |
| Stove bolts in bulk, Chicago | 80, 10, 5 and 2 1/2 |
| Stove bolts in bulk, Cleveland | 75, 20, 10, 5 and 2 1/2 |
| Tire bolts | 60, 5 and 5 |

Discounts of 70 per cent off on bolts and nuts applied on carload business. For less than carload orders discounts of 55 to 60 per cent apply.

Large Rivets

(1/2-In. and Larger)

| | Base per 100 Lb. |
|--------------------------------|------------------|
| F.o.b. Pittsburgh or Cleveland | \$2.90 |
| F.o.b. Chicago | 3.00 |

Small Rivets

(3/8-In. and Smaller)

| | Per Cent Off List |
|-------------------|-------------------|
| F.o.b. Pittsburgh | 70 and 10 |
| F.o.b. Cleveland | 70 and 10 |
| F.o.b. Chicago | 70 and 10 |

Cap and Set Screws

(Freight allowed up to but not exceeding 50c. per 100 lb. on lots of 200 lb. or more)

| | Per Cent Off List |
|---|-------------------|
| Milled cap screws | 80, 10 and 5 |
| Milled standard set screws, case hardened | 80 and 5 |
| Milled headless set screws, cut thread | 75 and 10 |
| Upset hex. head cap screws, U.S.S. thread | 85 |
| Upset hex. cap screws, S.A.E. thread | 85 |
| Upset set screws | 80, 10 and 5 |
| Milled studs | 70 |

Chicago

Steel Mill Backlogs Grow and Operations Have Been Stepped Up—Santa Fe Railroad Orders 3300 Cars

CHICAGO, Jan. 15.—Growth of backlogs since the first of the year and gradually expanding specifications reflect added strength in the Chicago iron and steel market. Steel producers are more certain of car tonnages, not in greatly augmented releases at this time, but in schedules that promise liberal specifications early in February. The building industry, which lacked support of active prospects a week ago, is encouraged by inquiries emanating from a wide territory in the Central West. Noteworthy among projects that are taking shape is a new oil refinery which will require 15,000 tons, according to preliminary estimates.

Two large Western railroads have made definite inquiry for over 60,000 tons of standard-section rails, and smaller railroads are expected to come in the market for a total of 10,000 tons. Track accessory releases are larger and production averages about 50 per cent of capacity. The Santa Fe has ordered an additional 3300 freight cars and the Pere Marquette will buy 1400 cars. The Wabash is preparing specifications for 25 to 50 locomotives.

Pressed by demands for better deliveries, local producers of steel have raised ingot output another point to 88 per cent of capacity. One mill is operating at its practical capacity. Specifications are well in excess of shipments and new sales, in spite of their size in the previous week, are a trifle above the average week in 1928. Deliveries on plates, shapes and bars range from two to five weeks.

Pig Iron.—The melt of foundry iron continues to grow, and a few large users have increased their schedules of shipments for the remainder of January. On the other hand, there is some evidence of overbuying in the appearance of several small resale lots of iron. These, however, are not of sufficient importance to disturb the market, which remains firm at \$20 a ton, f.o.b. local furnace. New business, though not as heavy as in the previous week, is noteworthy in view of heavy first quarter books. A melter in Wisconsin has ordered 2000 tons and a Milwaukee foundry has taken 1000 tons. A 600-ton sale of Valley iron is reported in western Michigan. Users are showing more interest in silvery and sales are active. Prices of this commodity show no more stability than in recent weeks. A few users are covering well beyond the first quarter.

Prices per gross ton at Chicago:
N'th'n No. 2 fdy., sil. 1.75 to 2.25... \$20.00
N'th'n No. 1 fdy., sil. 2.25 to 2.75... 20.50
Malleable, not over 2.25 sil. 20.00
High phosphorus 20.00
Lake Super. charcoal, sil. 1.50 27.04
So'th'n No. 2 fdy. (all rail) \$22.51 to 23.01
Low phos., sil. 1 to 2, copper free.. 29.50
Silvery, sil. 8 per cent. 30.75
Bess. ferrosilicon, 14-15 per cent... 47.29

Prices are delivered consumers' yards except on Northern foundry, high phosphorus and malleable, which are f.o.b. local furnace, not including an average switching charge of 61c. per gross ton.

Ferroalloys.—Although a few quotations for carloads of spiegeleisen have been made at \$34, Hazard, Pa., buyers' resistance is breaking prices to \$32 a ton. Sales are not numerous, and activity in this market is confined mostly to liberal specifications against old orders.

Prices delivered Chicago: 80 per cent ferromanganese, \$112.56; 50 per cent ferrosilicon, \$83.50 to \$88.50; spiegel-eisen, 19 to 21 per cent, \$40.76.

Coke.—Continued cold weather and a sustained rate of melt are drawing heavily on foundry coke supplies in this district. Prices are firm, and spot sales are more numerous.

Bolts, Nuts and Rivets.—Specifications for these commodities have receded as sharply as they advanced a week ago. The volume of releases, however, is affording producers an unchanged rate of output, with little opportunity to add to stocks.

Wire Products.—The jobbing trade is taking liberal shipments against specifications entered late in December. Fourth quarter contracts were made at lower prices than prevail now, and jobbers, in taking advantage of the old prices, are moving contrary to the usual practice of holding stocks to the minimum. For the country as a whole, jobbers find business more active than is usually expected at this time. Trade is especially good in the Middle West and in the Southwest, but it is quiet in the Southeast. Contracts on producers' books are in good volume, though it is noticeable that orders from the manufacturing trade account for the bulk of the tonnage. Jobbers are making forward commitments with extreme caution. Specifications from the manufacturing trade are steady. Wire mill output stands at 60 per cent of capacity.

Reinforcing Bars.—Fresh inquiries are coming out rapidly and a few sizable projects are near to being closed. About 650 tons, required for the Narragansett apartments, will be purchased in a few days. Several public school buildings in Chicago are being refigured; contracts have been signed for two similar structures in Milwaukee. A fair number of small awards are being made, but the aggregate tonnage is not ample to sustain output at the December rate. Prices are showing greater strength at 2.35c. per lb. for billet steel bars and 2.05c. for the rail steel commodity out of Chicago warehouses.

Sheets.—Scattered purchases are more numerous than a week ago, but the aggregate tonnage is small, and local hot mills continue to operate on a hand-to-mouth basis and at an aver-

age output of 80 per cent of capacity. It is quite apparent that users, who took heavy shipments against fourth quarter contracts, still have stocks that match well with current needs. The roofing trade is unusually quiet for this time of the year, when it normally is preparing for the spring demand. Locker makers are busy and light tank manufacturers are engaged at a normal rate for this time of the year. Deliveries range from two to four weeks, depending on the finish.

Base prices per lb., deliv'd from mill in Chicago: No. 24 black sheets, 3.00c.; No. 24 galv., 3.75c.; No. 10 blue ann'd, 2.25c. Deliv'd prices at other Western points are equal to the freight from Gary, plus the mill prices, which are 5c. per 100 lb. lower than Chicago delivered prices.

Cast Iron Pipe.—This market remains quiet in sales and inquiries. Public utilities have ordered 3000 tons and a few carloads have been placed here and there. Tonnages pending at Milwaukee and Minneapolis and the report that Detroit's needs are still open are the major points of interest to sellers. Carlot prices are steady at \$37 to \$38 a ton, Birmingham. Deliveries are prompt in most sizes.

Prices per net ton, deliv'd Chicago: Water pipe, 6-in. and over, \$43.70 to \$46.20; 4-in., \$47.70 to \$50.20; Class A and gas pipe, \$3 extra.

Structural Material.—Foremost among new projects in this district is the contemplated construction of a large refinery by the Empire Oil & Gas Co. Estimates place the steel needed at 15,000 tons. Actual inquiries aggregate fully 12,000 tons, the bulk of which is for bridge work in Chicago and Western States. The South Robey Street bridge, Chicago, will take 6000 tons. Of outstanding interest among awards is 1900 tons for a bridge at Joliet, Ill., for the Rock Island Railroad. A Minneapolis fabricator is said to be low bidder on 6000 tons required for the Northwest Trust Building in that city. Fresh inquiries are lending support to the structural material market, and there is some promise now that shops will carry through the winter months without serious curtailment in output. Fabricators are buying close to actual needs and are not building stocks except to a very limited degree.

Mill prices on plain material, per lb.: 2c. to 2.10c. base, Chicago.

Plates.—Purchases of steel plates for oil storage tank construction total 2700 tons, a part of which will be delivered to California and a part to refineries in Texas. Fresh inquiry from the West totals 2000 tons. The Empire Oil & Gas Co. has plans for a large refinery in the Chicago district. It is estimated that fully 15,000 tons of steel will be needed. Demand for plates for welded pipe manufacture is heavy. The Santa Fe will use more than 35,000 tons of steel for 3300 cars ordered in the week. These purchases, with those previously made, account for all but about 500 of the cars on which this railroad has taken prices. Fresh inquiry is for 1725 freight cars, 1400 of which are for the Pere Marquette. This week marks a moderate gain in plate specifications from car builders. Aggregate releases to

date from this source are not impressive, but schedules being arranged against car orders on shop books promise much to producers in the way of better balanced schedules. Deliveries are tightening slowly, though most sizes can still be had in two to three weeks. Prices for plates at 2c. to 2.10c., Chicago, are steady locally. To the south and southwest, Chicago producers are meeting strong competition and lower prices.

Mill prices on plates, per lb.: 2c. to 2.10c. base, Chicago.

Rails and Track Supplies.—Purchases of standard-section rails are light, but it is probable that the Illinois Central and the St. Paul, requiring a total of 60,000 tons, will soon place orders for delivery in the early part of this year. Several small Western railroads have not as yet made purchases for the new year, but sellers do not expect action on these tonnages until late in the winter. Four users of track fastenings have placed orders for 4000 tons, and inquiries, including the 9000 tons sought by the Pennsylvania, total 16,000 tons. Rail output is holding at 75 per cent of capacity. Recent heavy releases against orders for track supplies have afforded producers an opportunity to speed these departments. The average is 50 per cent of capacity, though production of tie plates and splice bars is far ahead of bolts and spikes. Prices for tie plates are causing some concern to producers when they meet at common points in competition with makers from the West and South. Locally, the market appears well established at \$43 a ton, but at St. Louis \$40 and \$41 a ton are common quotations. Orders for iron tie plates total 8000 tons.

Prices f.o.b. mill, per gross ton: Standard section open-hearth and Bess. rails, \$43; light rails, rolled from billets, \$36. Per lb.: Standard railroad spikes, 2.80c.; track bolts with square nuts, 3.80c.; steel tie plates, 2.15c.; angle bars, 2.75c.

Old Material.—Interest in this market centers in the efforts of dealers to cover old orders. Heavy melting steel at \$15.25 a gross ton, delivered, is firm. Recent sales by railroads have brought prices well above open market

quotations. A producer of shoveling steel, a substitute for heavy melting steel, has obtained the equivalent of \$15.67 a gross ton, delivered, for a round tonnage for shipment to a steel mill. Dealers readily pay \$15 a ton for uncut heavy melting steel for delivery to Gary. The available supply of railroad malleable is small, and some users are turning to the use of agricultural malleable, which has advanced sharply in the week. Part of the strength in the local market results from the fact that yards in recent months have given up the former practice of accumulating scrap for sale in the early spring months. This reservoir is well drained and visible supplies are lower than usual at this time of the year. Unsolicited inquiry is lighter, but buyers are receptive, and sales in small lots are numerous. In a few specific instances orders are being passed up by dealers who see small chance to cover profitably. The Studebaker Corporation, South Bend, Ind., is offering 45 cars of borings, flashings and clippings.

Prices deliv'd Chicago district consumers:
Per Gross Ton

| Basic Open-Hearth Grades: | |
|--|--------------------|
| Heavy melting steel..... | \$14.75 to \$15.25 |
| Shoveling steel..... | 14.75 to 15.25 |
| Frogs, switches and guards, cut apart, and misc. rails | 15.75 to 16.25 |
| Hydraulic compressed sheets | 13.00 to 13.50 |
| Drop forge flashings..... | 12.00 to 13.00 |
| Forg'd, cast and r'd steel carwheels..... | 18.00 to 18.50 |
| Rail'd tires, charg. box size..... | 17.75 to 18.25 |
| Rail'd leaf spring cut apart..... | 17.75 to 18.25 |

| Acid Open-Hearth Grades: | |
|-----------------------------|----------------|
| Steel couplers and knuckles | 16.00 to 16.50 |
| Coil springs..... | 18.25 to 18.75 |

| Electric Furnace Grades: | |
|--|----------------|
| Axle turnings..... | 14.50 to 15.00 |
| Low phos. punchings..... | 17.00 to 17.50 |
| Low phos. plate, 12 in. and under..... | 16.50 to 17.00 |

| Blast Furnace Grades: | |
|-------------------------------|----------------|
| Axle turnings..... | 12.00 to 12.50 |
| Cast iron borings..... | 12.25 to 12.75 |
| Short shoveling turnings..... | 12.25 to 12.75 |
| Machine shop turnings..... | 8.00 to 8.50 |

| Rolling Mill Grades: | |
|----------------------|----------------|
| Iron rails..... | 15.00 to 15.50 |
| Rerolling rails..... | 17.00 to 17.50 |

| Cupola Grades: | |
|---------------------------------|----------------|
| Steel rails less than 3 ft..... | 17.50 to 18.00 |
| Steel rails less than 2 ft..... | 19.00 to 19.50 |
| Angle bars, steel..... | 16.25 to 16.75 |
| Cast iron carwheels..... | 14.00 to 14.50 |

| Malleable Grades: | |
|-------------------|----------------|
| Railroad..... | 18.25 to 18.75 |
| Agricultural..... | 15.50 to 16.00 |

| Miscellaneous: | |
|---------------------------------------|----------------|
| *Relaying rails 56 to 60 lb. | 23.00 to 25.00 |
| *Relaying rails, 65 lb. and heav..... | 26.00 to 31.00 |

| Per Net Ton | |
|----------------------------------|----------------|
| Rolling Mill Grades: | |
| Iron angles and splice bars | 14.50 to 15.00 |
| Iron arch bars and transoms..... | 20.50 to 21.00 |
| Iron car axles..... | 27.50 to 28.00 |
| Steel car axles..... | 16.00 to 16.50 |
| No. 1 railroad wrought..... | 13.25 to 13.75 |
| No. 2 railroad wrought..... | 13.25 to 13.75 |
| No. 1 busheling..... | 11.50 to 12.00 |
| No. 2 busheling..... | 8.50 to 9.00 |
| Locomotive tires, smooth..... | 13.25 to 13.75 |
| Pipes and flues..... | 9.50 to 10.00 |

| Cupola Grades: | |
|------------------------------|----------------|
| No. 1 machinery cast..... | 15.75 to 16.25 |
| No. 1 railroad cast..... | 15.00 to 15.50 |
| No. 1 agricultural cast..... | 14.50 to 15.00 |
| Stove plate..... | 12.25 to 12.75 |
| Grate bars..... | 12.50 to 13.00 |
| Brake shoes..... | 11.50 to 12.00 |

*Relaying rails including angle bars to match, are quoted f.o.b. dealers' yards.

Bars.—Sales of mild steel bars are heavy and specifications top the current rate of shipments. First quarter contracts placed since the first of the year have added heavy tonnages to makers' books. Despite several large releases by automobile manufacturers and parts makers, agricultural implement manufacturers are still the heaviest consumers of this commodity. However, schedules for steel to be shipped to the automobile industry are now being arranged, and this industry promises again to take leadership soon after Feb. 1. Several automobile plants had planned heavier schedules for January, but have had difficulty in getting new models on production lines. Prices of alloy steel bars are steady on the general run of miscellaneous business. Order books are heavy and releases are in good volume. Output stands at 80 per cent of capacity. The iron bar market is without feature. Releases for rail steel bars are heavier, and it is evident that consumers are in need of quantities above those specified in late December. New purchases are scattered and in small volume. Both Chicago Heights mills continue to operate on a double turn basis.

Hot-Rolled Strips.—Consumers of hot-rolled strips are busy and are entering liberal specifications. Prices are steady at 2c. to 2.10c., depending on width.

Newton Steel May Build Mills in Michigan

The Newton Steel Co., Newton Falls, Ohio, is negotiating for a manufacturing site in the vicinity of Detroit and is said to be considering developments in that territory to cost \$10,000,000. The plans are reported to have the backing of the General Motors Corporation and the Fisher Body Corporation, the largest consumers of Newton products. From the proceeds of the sale of common stock the Newton company has realized \$1,700,000 to be used for expansion and improvement. Original intention was to add 10 sheet mills to the 20 which the company now operates at Newton Falls, but these funds may be expended in Michigan. Automobile body sheets constitute the company's principal product.

Youngstown Mills Operating at High Rate

YOUNGSTOWN, Jan. 15.—Iron and steel production schedules this week approach the record output of last October. Of 53 independent open-hearth furnaces, 48 are active and 124 of 127 sheet mills are operating. Strip and tin plate mills are scheduled at nearly capacity. New business in flat-rolled steels for the automotive industry is being maintained at a high rate.

Warehouse Prices, f.o.b. Chicago

| Base per Lb. | |
|--|--------|
| Plates and structural shapes..... | 3.10c. |
| Soft steel bars..... | 3.00c. |
| Reinforc'g bars, billet steel..... | 2.35c. |
| Reinforc'g bars, rail steel..... | 2.05c. |
| Cold-fin. steel bars and shafting— | |
| Rounds and hexagons..... | 3.60c. |
| Flats and squares..... | 4.10c. |
| Bands (1/4 in. in Nos. 10 and 12 gages)..... | 3.20c. |
| Hoops (No. 14 gage and lighter)..... | 3.75c. |
| Black sheets (No. 24)..... | 3.80c. |
| Galv. sheets (No. 24)..... | 4.65c. |
| Blue ann'd sheets (No. 10)..... | 3.35c. |
| Spikes, stand. railroad..... | 3.55c. |
| Track bolts..... | 4.55c. |
| Rivets, structural..... | 3.60c. |
| Rivets, boiler..... | 3.60c. |
| Per Cent Off List | |
| Machine bolts..... | 60 |
| Carriage bolts..... | 60 |
| Coach or lag screws..... | 60 |
| Hot-pressed nuts, sq. tap. or blank..... | 60 |
| Hot-pressed nuts, hex., tap. or blank..... | 60 |
| No. 8 black ann'd wire, per 100 lb..... | \$3.30 |
| Com. wire nails, base per keg..... | 3.20 |
| Cement c't'd nails, base per keg..... | 3.20 |

Cleveland

Steel Releases Show Some Gain But a Few Automobile Plants Are Slow to Increase Production

CLEVELAND, Jan. 15.—The demand for finished steel showed some gain the past week, due to increased specifications from the automotive industry, particularly for steel bars and hot-rolled strip steel. While some of the motor car companies increased production during the week, several have been slower than they expected in getting up to schedules on new models, and this has resulted in considerable accumulation of stocks of steel and finished parts and a restriction of production by the body plants and parts makers. This has also caused some holding back of releases to the mills, which is particularly true of body sheets. A few of the motor car companies appear to be waiting until after the automobile shows before speeding up operations. However, the feeling in this industry continues very optimistic. A survey of metal-working plants in this territory indicates that they are operating at an average of 87 per cent of capacity, auto parts manufacturers generally being busier than plants in other industries.

The Pittsburgh Steamship Co., operating the Lake ore fleet of the Steel Corporation, has placed orders for three 600-ft. freighters, each requiring 5000 tons of plates and structural shapes. Two will be built by the American Shipbuilding Co., Cleveland, and the third by the Great Lakes Engineering Works, Detroit. The inquiry of this company, sent out some time ago was for only two boats. This is the first business in new boats that Lake shipyards have taken in some time.

The Nickel Plate Railroad is placing orders for its rail requirements for 1929 aggregating about 23,000 tons, or the same as last year. While the contracts may not be formally closed for a day or two, it is understood that the tonnage will be equally divided among the Carnegie Steel Co., the Illinois Steel Co., the Bethlehem Steel Co. and the Inland Steel Co.

The outlook in the building field is fairly good. The competitive situation is bringing out some low prices for fabricated work in the Detroit territory. Awards during the week included two Detroit jobs requiring over 4000 tons.

Outside mills now appear to be holding firmly to 1.95c., Cleveland, for steel bars, no longer meeting the ruling Cleveland mill base of 1.90c. With Pittsburgh as the basing point, the common range is 1.90c. to 1.95c. for steel bars, plates and structural shapes.

Pig Iron.—Sales increased considerably the past week, during which Cleveland interests sold 24,000 tons of foundry and malleable iron. However, the market in this territory is rather quiet, as only 6000 tons was sold by Lake Erie furnaces. Practically all consumers in the northern Ohio territory are covered for first quarter. Not much activity is reported in Michigan. No general interest is as yet being shown in second quarter contracts, although a Muncie, Ind., foundry purchased 2500 tons of malleable iron for that delivery. This did not go to a Lake furnace. Prices are unchanged at \$18.50 to \$19.50, Lake furnace, for Ohio and Indiana shipment and \$20 for Michigan. Lake Erie furnaces are feeling the effect

of Valley competition in some sections, particularly in Indiana, as the lower prices quoted by the Valley producers more than offset the freight disadvantage for shipment to some points. Specifications against contracts gained the past week. Several of the automobile foundries are now taking heavy shipments. Jobbing foundries in this territory are now operating well and are taking a fair amount of iron.

Prices per gross ton at Cleveland:

| | | |
|---------------------------|--------------|------------------|
| N'th'n fdy., sil. | 1.75 to 2.25 | \$19.50 |
| S'th'n fdy. | 1.75 to 2.25 | \$22.50 to 23.00 |
| Malleable | | 19.50 |
| Ohio silvery, 8 per cent. | | 29.00 |
| Basic Valley furnace | | 17.50 |
| Stand. low phos., Valley | 26.50 to | 27.00 |

Prices, except on basic and low phosphorus, are delivered Cleveland. Freight rates: 50c. from local furnaces; \$3 from Jackson, Ohio; \$6 from Birmingham.

Sheets.—Specifications against first quarter contracts show some gain, but there is not much new business. The automotive industry has not got under way on new models as fast as was expected and considerable material, particularly in auto body sheets, is backed up in body plants or at the sheet mills. Consequently, no specifications have come from some consumers this month, but new releases are looked for later in the month. Production of bodies for Chevrolet cars is now up to 3500 tons per day in a Cleveland plant. Demand from the stove industry has become somewhat more active, and there is a fair volume of orders from diversified industries. Regular prices are being maintained.

Wire Products.—There has not been

Warehouse Prices, f.o.b. Cleveland

| | Base per Lb. |
|-------------------------------------|------------------|
| Plates and struct. shapes | 3.00c. |
| Soft steel bars | 3.00c. |
| Reinforc. steel bars | 2.25c. to 2.50c. |
| Cold-fin. rounds and hex. | 3.65c. |
| Cold-fin. flats and sq. | 4.15c. |
| Hoops and bands, No. 12 to 14 in. | |
| Inclusive | 3.25c. |
| Hoops and bands, No. 13 and lighter | 3.65c. |
| Cold-finished strip | 5.95c. |
| Black sheets (No. 24) | 3.50c. |
| Galvanized sheets (No. 24) | 4.45c. |
| Blue ann'd sheets (No. 10) | 3.25c. |
| No. 9 ann'd wire, per 100 lb. | \$2.95 |
| No. 9 gal. wire, per 100 lb. | 3.40 |
| Com. wire nails, base per keg | 2.95 |

*Net base, including boxing and cutting to length.

much of a test of the new prices, as consumers and jobbers placed heavy specifications at the old prices and some consumers were able to order manufacturers' wire on old contracts for shipment up to March. Concessions to \$2.55 per keg on nails are reported in some sections.

Reinforcing Bars.—Cleveland jobbers have renewed efforts that were unsuccessfully made a few months ago to place reinforcing bars on a 2.25c., Pittsburgh, basis. Many of the larger warehouse orders have been going at close to mill prices. Inquiry for small lots shows a gain.

Warehouse Business.—Orders have picked up now that inventories are over, and jobbers report business fairly good. The new extras recently adopted on hoops and bands are being maintained.

Semi-Finished Steel.—Heavy specifications for sheet bars at the new \$34 price were received during the week by a local mill. Shipments against the lower-priced fourth quarter contracts are now about cleaned up. Billets and slabs are not moving as well as sheet bars and some consumers have not yet taken out all their fourth quarter tonnage, which was placed at \$33, the current price. A local mill is now operating all of its 14 open-hearth furnaces.

Strip Steel.—Heavy tonnages of hot-rolled strip were purchased during the week by some of the Michigan automobile companies. These had delayed buying while making efforts to secure price concessions, which proved unsuccessful, as the business was placed at 1.80c., Pittsburgh, for wide strip and 1.90c. for narrow. Specifications have increased from this industry, and most mills now have considerable tonnage on their books. While cold-rolled strip is moving fairly well, some of the mills could take more business. The more general use of wide material in the automotive industry is diverting some business from cold-rolled strip to full finished sheets. Cold-rolled strip is firm at 2.85c., Cleveland.

Coke.—Cold weather has stimulated the demand for domestic by-product coke, and makers have advanced their price 50c. a ton to \$4.75 for egg size for shipment to some points. For Cleveland delivery, the price is unchanged at \$4.50, ovens, or \$6, delivered. Specifications for Connellsville foundry coke are fair and prices are unchanged. Foundry heating coke is 10c. to 15c. a ton higher, now being quoted at \$2.85 to \$2.90, ovens.

Old Material.—Steel making scrap has again advanced 25c. to 50c. a ton. A Valley district mill purchased several thousand tons of No. 1 heavy melting steel at \$19, and that appears to have become a rather common price in Youngstown. Compressed sheet steel is quoted at \$18 for Youngstown delivery. Considerable activity developed during the week in dealers' purchases. Locally, dealers are paying up to \$15.75 for No. 1 heavy melting steel

for delivery to a Cleveland mill. Blast furnace scrap is moderately active, but has not advanced in price. Severe weather is interfering with scrap shipments.

Prices per gross ton delivered consumers' yards:

| Basic Open-Hearth Grades | | |
|---|------------|---------|
| No. 1 heavy melting steel. | \$15.25 to | \$15.75 |
| No. 2 heavy melting steel. | 14.75 to | 15.25 |
| Compressed sheet steel. | 15.00 to | 15.50 |
| Light bundled sheet stamp'gs | 12.00 to | 12.50 |
| Drop forge flashings. | 12.25 to | 12.75 |
| Machine shop turnings. | 10.25 to | 10.75 |
| No. 1 railroad wrought. | 12.75 to | 13.00 |
| No. 2 railroad wrought. | 14.50 to | 15.00 |
| No. 1 busheling | 12.50 to | 12.75 |
| Pipes and flues | 9.00 to | 9.50 |
| Steel axle turnings. | 12.50 to | 13.00 |
| Acid Open-Hearth Grades | | |
| Low phos. forging crops. | 18.50 to | 19.00 |
| Low phos., billet, bloom and slab crops | 18.50 to | 19.00 |
| Low phos. sheet bar crops. | 17.50 to | 18.00 |
| Low phos. plate scrap. | 16.50 to | 17.00 |
| Blast Furnace Grades | | |
| Cast iron borings | 11.75 to | 12.00 |
| Mixed bor'g and short turn'gs | 11.75 to | 12.00 |
| No. 2 busheling | 11.75 to | 12.00 |
| Cupola Grades | | |
| No. 1 cast | 16.50 to | 17.00 |
| Railroad grate bars. | 11.00 to | 12.00 |
| Stove plate | 12.00 to | 12.50 |
| Rails under 3 ft. | 16.75 to | 17.25 |
| Miscellaneous | | |
| Railroad malleable | 16.00 to | 16.50 |
| Rails for rolling | 16.25 to | 16.50 |

Weirton Steel Co. to Spend \$10,000,000 for Expansion

The Weirton Steel Co., Weirton, W. Va., has announced plans for an addition to its blast furnace and by-product coke departments to consist of another blast furnace and another battery of coke ovens. The company has two blast furnaces and two batteries of coke ovens. With the completion of the new units the company will have a total monthly capacity of approximately 70,000 tons each of pig iron and furnace coke. These and other contemplated improvements will mean an expenditure of approximately \$10,000,000 and will be started as soon as plans are completed.

Radiator Company Expands

The Lincoln Niagara Corporation, North Tonawanda, N. Y., has been formed to take over the assets and business of the Lincoln Radiator Corporation and has leased the entire plant formerly owned by the Niagara Radiator & Boiler Co. The new corporation will manufacture cast iron house heating boilers and radiators. Willett W. Wetmore, formerly vice-president and general manager of the Niagara company, will be president and general manager of the new corporation; Edward C. Stephen, for many years vice-president and sales manager of the Hart & Crouse Co., Utica, N. Y., vice-president and sales manager, and Elmer S. Hering, formerly secretary and assistant treasurer of the Niagara company, secretary and treasurer.

The Asiatic Petroleum Co. has ordered nine large steam driven pumps for installation at its Venezuelan oil properties from the National Transit Pump & Machine Co., Oil City, Pa.

New York

Melters Showing More Interest in Pig Iron—Subway Calls for 14,100 Tons of Steel

NEW YORK, Jan. 15.—Foundry operations are getting back into full swing, following inventory-taking, and melters are manifesting more interest in pig iron. Sales for the week total 7500 to 8000 tons, and a number of fair-sized inquiries have appeared. A consuming interest that had underestimated its first quarter requirements has entered the market for 2000 tons. Another buyer wants 500 tons for water shipment. However, relatively little first quarter iron remains unbought, and the market is not likely to show much of a revival until a buying movement for the second quarter sets in. The Warren Foundry & Pipe Co., New York, has closed for 2000 tons. The American Locomotive Co. has bought 500 tons of No. 2X for delivery at Schenectady, N. Y. The General Electric Co. wants 50 tons of foundry for its Pittsfield, Mass., plant and 50 tons of charcoal iron for its Bayway, N. J., works. Buffalo foundry iron, at \$17.50 to \$18, base furnace, is not entirely free from shading. On the other hand, the position of furnace stocks in the Buffalo district on Jan. 1 was very favorable, the excess above minimum shipping requirements totaling only 60,000 tons. Eastern Pennsylvania foundry iron is still available in this territory at \$19.50, base furnace. An advance in the duty on pig iron to \$3 or \$4 a ton, as proposed in current tariff hearings, would not, it is believed, have much effect on domestic prices, since much of the foreign iron now being imported is commanding a premium over American brands. It is thought likely, however, that such an increase would sharply reduce, if not entirely stop, the inflow of foreign metal.

Prices per gross ton, delivered New York district:

| | | |
|-----------------------------|--------------|--------------------|
| Buffalo No. 2 fdy., sil. | 1.75 to 2.25 | \$22.41 to \$22.91 |
| *Buf. No. 2, del'd east. | | |
| N. J. | | 20.78 to 21.28 |
| East. Pa. No. 2 fdy., sil. | 1.75 to 2.25 | 20.89 to 22.52 |
| East. Pa. No. 2X fdy., sil. | 2.25 to 2.75 | 21.39 to 23.02 |
| East. Pa. No. 1X fdy., sil. | 2.75 to 3.25 | 21.89 to 23.52 |

Freight rates: \$4.91 from Buffalo, \$1.39 to \$2.52 from eastern Pennsylvania.
*Price delivered to New Jersey cities having rate of \$3.28 a ton from Buffalo.

Ferroalloys.—A few sales of small lots of foreign spiegeleisen are noted for early delivery, evidently to fill in the demand which cannot easily be met by some domestic producers. There have been sales of a few carloads of ferromanganese, and specifications on both alloys are heavy.

Reinforcing Bars.—The Turner Construction Co. will announce this week the distribution of the bars required for the Delaware, Lackawanna & Western terminal in Jersey City, calling for about 8000 tons. It is expected that several companies will share in the order. Awards placed during the

last week were light in tonnage as well as in number, the largest reported having been a subway job of 300 tons which went to Concrete Steel Co. Few important new projects have come out since the first of the year. Prices are unchanged.

Warehouse Prices, f.o.b. New York

| Base per Lb. | |
|---|------------------|
| Plates and structural shapes. | 3.30c. |
| Soft steel bars, small shapes. | 3.25c. |
| Iron bars | 3.24c. |
| Iron bars, Swed. charcoal. | 7.00c. to 7.25c. |
| Cold-fin. shafting and screw stock— | |
| Rounds and hexagons | 3.50c. |
| Flats and squares | 4.00c. |
| Cold-roll, strip, soft and quarter hard | |
| Hoops | 5.15c. to 5.40c. |
| Bands | 4.25c. |
| Blue ann'd sheets (No. 10) | 3.85c. to 3.90c. |
| Long terme sheets (No. 24) | 5.80c. |
| Standard tool steel | 12.00c. |
| Wire, black annealed | 4.50c. |
| Wire, galv. annealed | 5.15c. |
| Tire steel, 1½ x ½ in. and larger. | 3.30c. |
| Smooth finish, 1 to 2½ x ¼ in. and larger | 3.65c. |
| Open-hearth spring steel, bases, | 4.50c. to 7.00c. |
| Per Cent Off List | |
| Machine bolts, cut thread: | |
| ¾ x 6 in. and smaller | .60 |
| 1 x 30 in. and smaller. | .50 to 50 and 10 |
| Carriage bolts, cut thread: | |
| ¾ x 6 in. and smaller | .60 |
| ¾ x 20 in. and smaller. | .50 to 50 and 10 |
| Coach screws: | |
| ¾ x 6 in. and smaller | .60 |
| 1 x 16 in. and smaller. | .50 to 50 and 10 |
| Boiler Tubes— | |
| Lap welded, 2-in. | \$17.33 |
| Seamless steel, 2-in. | 20.24 |
| Charcoal iron, 2-in. | 25.00 |
| Charcoal iron, 4-in. | 67.00 |

| Discounts on Welded Pipe | | |
|--------------------------|-------|-------|
| Standard Steel— | Black | Galv. |
| ¾-in. butt | 46 | 29 |
| ¾-in. butt | 51 | 37 |
| 1-3-in. butt | 53 | 39 |
| 2½-6-in. lap | 48 | 35 |
| 7 and 8-in. lap. | 44 | 17 |
| 11 and 12-in. lap. | 37 | 12 |

| Wrought Iron— | | |
|---------------|----|-----|
| ¾-in. butt | 5 | +19 |
| ¾-in. butt | 11 | +9 |
| 1-1½-in. butt | 14 | +6 |
| 2-in. lap | 5 | +14 |
| 3-6-in. lap | 11 | +6 |
| 7-12-in. lap | 3 | +16 |

| Tin Plate (14 x 20 in.) | | |
|-------------------------|--------|---------|
| | Prime | Seconds |
| Coke, 100 lb. base box. | \$6.45 | \$6.20 |
| Charcoal per Box— | | |
| | A | AAA |
| IC | \$9.70 | \$12.10 |
| IX | 12.00 | 14.25 |
| IXX | 13.90 | 16.00 |

| Terne Plate (14 x 20 in.) | | |
|---------------------------|------------|---------|
| IC—20-lb. coating | \$10.00 to | \$11.00 |
| IC—30-lb. coating | 12.00 to | 13.00 |
| IC—40-lb. coating | 13.75 to | 14.25 |

| Sheets, Box Annealed—Black, C. R. | | |
|-----------------------------------|--|---------|
| One Pass | | Per Lb. |
| Nos. 18 to 20. | | 3.80c. |
| No. 22. | | 3.95c. |
| No. 24. | | 4.00c. |
| No. 26. | | 4.10c. |
| No. 28* | | 4.25c. |
| No. 30. | | 4.50c. |

| Sheets, Galvanized | | |
|--------------------|--|---------|
| | | Per Lb. |
| No. 14. | | 4.40c. |
| No. 16. | | 4.25c. |
| No. 18. | | 4.40c. |
| No. 20. | | 4.50c. |
| No. 22. | | 4.60c. |
| No. 24. | | 4.75c. |
| No. 26. | | 5.00c. |
| No. 28* | | 5.25c. |
| No. 30. | | 5.65c. |

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

Finished Steel.—Except in sheets and wire products, for which specifications were heavy in December because of advancing prices, the volume of new business and specifications against first quarter contracts has been exceptionally good in the past week. In some lines it was the best week in several months. Sheet and wire mills are well engaged on fourth quarter specifications, having from three to six weeks' output on their books. The orders of the past week were swelled by specifications from the New York Central and Erie railroads for tie plates, the New York Central having specified nearly all of its maximum coverage, which was for 2,750,000 plates. The Erie specifications were smaller, but the total from both roads is upward of 20,000 tons. Bids will be taken Feb. 5 on two sections of the Brooklyn subway, calling for 14,100 tons of structural shapes. This brings the total of pending subway work to approximately 55,000 tons, a large part of which is expected to be placed this month. The elevated roadway to extend along the Hudson River from Canal to Seventy-second Street in Manhattan has finally been approved by the city authorities and plans for the first section, calling for 25,000 tons of shapes, will be ready in a few days. The entire project will require 100,000 tons of structural steel. Several large office buildings have been announced recently which will take large tonnages of steel, but inquiry has not been made by the general contractors. Prices of all products are steady and without change.

Mill prices per lb., deliv'd New York: Soft steel bars, 2.24c. to 2.34c.; plates, 2.17½c. to 2.27½c.; struc. shapes, 2.14½c. to 2.24½c.; bar iron, 2.14c. to 2.24c.

Warehouse Business.—Buying from stock continues fairly active, despite the usual seasonal decline in demand for structural material and black and galvanized sheets. While January is usually a less active month than December, jobbers report that it will probably compare favorably this year.

Cast Iron Pipe.—Northern makers of pressure pipe are operating at about 60 per cent of capacity, which is usual for this time of year. A number of private inquiries for pipe have not yet been awarded, including about 5000 tons of gas pipe for the Brooklyn Union Gas Co., Brooklyn, and about 6000 tons of pipe inquired for by Stevens & Wood, engineers, New York. Quotations of both Northern and Southern pipe makers are firm, with Birmingham plants quoting \$37 to \$38 per net ton, Birmingham, on ordinary tonnages and Northern prices ranging from \$39.60 to \$40.60 per net ton, delivered New York. On two small pipe inquiries totaling about 100 tons each for the Department of Purchase, New York, the United States Cast Iron Pipe & Foundry Co. is reported to have been the low bidder.

Prices per net ton deliv'd New York: Water pipe, 6-in. and larger, \$39.60 to \$41.60; 4-in. and 5-in., \$34.60 to \$46.60; 3-in., \$54.60 to \$56.60; Class A and gas pipe, \$3 extra.

Coke.—Standard foundry coke is

rather inactive at \$3.50 to \$4 per net ton, Connellsville, and standard furnace is only moderately firm at \$2.75 per ton, Connellsville. Special brands of beehive coke are unchanged at \$4.85 per net ton, ovens, or \$8.56 per net ton, delivered to northern New Jersey, Jersey City and Newark, and \$9.44 to New York and Brooklyn. By-product foundry coke is \$9 to \$9.40 per net ton, Newark or Jersey City, and \$10.06, New York or Brooklyn.

Old Material.—The continued upward trend of scrap prices in Pittsburgh is diverting a sizable tonnage of material from eastern Pennsylvania consumers to that district, and brokers are beginning to advance their buying prices to obtain sufficient scrap to fill contracts. While No. 1 heavy melting steel and yard grade are unchanged in price from a week ago, certain railroad specialties have advanced 50c. to \$1 a ton. As much as \$23.25 per ton, delivered eastern Pennsylvania, is being paid for steel car axles; specification pipe is quoted by brokers at \$16 per ton, delivered Lebanon, Pa.; rerolling rails have advanced on recent purchases by brokers to \$18 per ton, delivered, and on the

basis of recent sales of railroad malleable to local Connecticut consumers, brokers are offering up to \$13.50 per ton, New York. Export demand for scrap is well maintained; a contract for 10,000 tons of No. 2 heavy melting steel is understood to have been closed by a New York dealer for shipment to Danzig.

Dealers' buying prices per gross ton, f.o.b. New York:

| | |
|--|--------------------|
| No. 1 heavy melting steel | \$12.50 to \$13.00 |
| Heavy melting steel (yard) | 9.50 to 10.00 |
| No. 1 hvy. breakable cast | 12.50 to 13.00 |
| Stove plate (steel works) | 8.75 to 9.25 |
| Locomotive grate bars | 8.75 to 9.25 |
| Machine shop turnings | 8.00 |
| Short shoveling turnings | 8.00 |
| Cast borings (blast furn. or steel works) | 7.00 |
| Mixed borings and turnings | 7.00 |
| Steel car axles | 19.00 to 19.50 |
| Iron car axles | 24.50 to 25.00 |
| Iron and steel pipe (1 in. dia., not under 2 ft. long) | 11.75 to 12.25 |
| Forge fire | 8.50 |
| No. 1 railroad wrought | 12.50 to 13.00 |
| No. 1 yard wrought, long | 11.50 to 12.00 |
| Rails for rolling | 13.75 to 14.25 |
| Cast iron car wheels | 13.00 to 13.50 |
| Stove plate (foundry) | 9.50 |
| Malleable cast (railroad) | 12.00 to 13.00 |
| Cast borings (chemical) | 11.25 |

Prices per gross ton, deliv'd local foundries:

| | |
|---|--------------------|
| No. 1 machry, cast | \$17.00 to \$17.50 |
| No. 1 hvy. cast (columns, bldg. materials, etc.), cupola size | 15.00 to 15.50 |
| No. 2 cast (radiators, cast boilers, etc.) | 14.50 to 15.00 |

Philadelphia

Scrap Prices Strong—Steel Mills Receiving More Specifications On Contracts

PHILADELPHIA, Jan. 15.—Most eastern Pennsylvania mills are receiving a fair volume of specifications against first quarter steel contracts, but their backlogs are rather small. In the past few days, however, consumers have been specifying more freely and producers expect to maintain the present rate of operations. Pig iron and steel prices are stable, the only feature of the present price situation being the steady upward trend of iron and steel scrap prices, stimulated by a strong market in the Pittsburgh district.

Pig Iron.—About 4000 tons of basic iron for a Phoenixville, Pa., consumer has not yet been placed. Meanwhile, another eastern Pennsylvania consumer of basic iron has been asking for prices on a few thousand tons, its usual requirements. Foundry iron prices are maintained fairly well at \$21 per ton for delivery in the present quarter, but most sellers are not yet

willing to quote for second quarter delivery. However, some consumers of foundry iron are covered by contracts made late last year for iron to be delivered well into the second quarter of the year. The tariff hearing at Washington this week is attracting the attention of eastern Pennsylvania furnaces, and some increase in the present duty on pig iron is expected by most producers.

Warehouse Prices, f.o.b Philadelphia

| | Base per Lb. |
|---|------------------|
| Plates, ¼-in. and heavier | 2.70c. |
| Plates, ⅝-in. | 2.90c. |
| Structural shapes | 2.70c. |
| Soft steel bars, small shapes, iron bars (except bands) | 2.80c. |
| Round-edge iron | 3.50c. |
| Round-edge steel, iron finished 1½ x 1½ in. | 3.50c. |
| Round-edge steel, planished | 4.30c. |
| Reinforc. steel bars, sq. twisted and deform. | 2.60c. to 2.80c. |
| Cold-fin. steel, rounds and hex. | 3.45c. |
| Cold-fin. steel, sq. and flats | 3.95c. |
| Steel hoops | 3.40c. |
| Steel bands, No. 12 to ⅝-in., inclus. | 3.15c. |
| Spring steel | 5.00c. |
| *Black sheets (No. 24) | 4.00c. |
| †Galvanized sheets (No. 24) | 4.75c. |
| Diam ann'd sheets (No. 10) | 3.15c. |
| Diam. pat. floor plates— | |
| ¼-in. | 5.30c. |
| ⅝-in. | 5.50c. |
| Rails | 3.20c. |
| Swedish iron bars | 6.60c. |

*For 50 bundles or more; 10 to 49 bun., 4.10c. base; 1 to 9 bun., 4.35c. base.
†For 50 bundles or more; 10 to 49 bun., 4.95c. base; 1 to 9 bun., 5.30c. base.

Prices per gross ton at Philadelphia:

| | |
|---|--------------------|
| East. Pa. No. 2, 1.75 to 2.25 sil. | \$21.26 to \$21.76 |
| East. Pa. No. 2X, 2.25 to 2.75 sil. | 21.76 to 22.26 |
| East. Pa. No. 1X | 22.26 to 22.76 |
| Basic (del'd east. Pa.) | 19.75 to 20.25 |
| Gray forge | 20.50 to 21.00 |
| Malleable | 21.25 to 21.75 |
| Stand. low phos. (f.o.b. N. Y. State furnace) | 22.00 to 23.00 |
| Cop. br'g low phos. (f.o.b. furnace) | 23.00 to 23.50 |
| Va. No. 2 plain, 1.75 to 2.25 sil. | 25.29 |
| Va. No. 2X, 2.25 to 2.75 sil. | 25.79 |

Prices, except as specified otherwise, are deliv'd Philadelphia. Freight rates: 76c. to \$1.64 from eastern Pennsylvania furnaces; \$4.54 from Virginia furnaces.

Bars.—Mills are well booked with specifications for current delivery, but have small backlogs. Prices are firm at 1.90c., Pittsburgh, or 2.22c., Philadelphia, which is apparently the maximum as well as the minimum quotation for new business.

Shapes.—Eastern Pennsylvania producers have a substantial tonnage of business booked, but competition for further orders is keen, and 2c., f.o.b. nearest mill to consumer, is generally shaded when desirable business is offered. Contracts and most of the current orders are at 2c., Pencoyd, Pa., or 2.06c., delivered Philadelphia. Fabricators are bidding on some sizable projects in this district. About 12,000 tons of structural steel is required for the Reading Commercial Building, general contract for which has been awarded to William Steel & Sons.

Plates.—Quotations continue at 2c. to 2.05c., Coatesville, or 2.10c. to 2.15c., delivered Philadelphia. Mills report a steady flow of specifications against current contracts and have some sizable plate tonnages in prospect from shipbuilding contracts not yet awarded.

Sheets.—Blue annealed sheets range from 2c. to 2.10c., Pittsburgh, or 2.32c. to 2.42c., delivered Philadelphia, depending upon the width. Black sheets are unchanged at 2.85c., Pittsburgh, or 3.17c., Philadelphia, and galvanized are quoted at 3.60c., Pittsburgh, or

3.92c., Philadelphia, although there are reports of recent sales of galvanized roofing sheets to preferred Southern buyers at 3.50c., Pittsburgh. Local sheet consumers are reported as operating at a good rate, especially users of electrical sheets.

Imports.—In the week ended Jan. 12, arrivals of ore at this port were 624 tons of chrome ore from Portuguese Africa and 16 tons of manganese ore from Germany. No pig iron was received, but 32 tons of ferro-manganese came in from the United Kingdom. Steel imports were 161 tons of structural shapes, 61 tons of steel bars and 77 tons of hoops and bands from Belgium, six tons of steel wire from Germany and 10 tons of strip steel and 21 tons of steel scrap from the United Kingdom.

Old Material.—The price tendency on all grades of scrap continues upward. No. 1 heavy melting steel is unchanged, despite continued advance in the Pittsburgh district, but local consumers of this grade are reported to be interested in making new contracts. Heavy breakable cast, specification pipe and stove plate show advances of 50c. a ton on recent sales

to eastern Pennsylvania consumers. Dealers report only a small available supply of strictly No. 1 scrap, and, with demand in western Pennsylvania decidedly active, are not inclined to commit themselves for heavy tonnages except at advanced prices.

Prices per gross ton delivered consumers' yards. Philadelphia district:

| | |
|---|--------------------|
| No. 1 heavy melting steel | \$16.00 to \$16.50 |
| Scrap T rails | 15.50 to 16.00 |
| No. 2 heavy melting steel | 12.50 to 13.50 |
| No. 1 railroad wrought | 16.00 to 16.50 |
| Bundled sheets (for steel works) | 11.00 to 11.50 |
| Machine shop turnings (for steel works) | 11.75 to 12.00 |
| Heavy axle turnings (or equiv.) | 13.50 to 14.00 |
| Cast borings (for steel works and roll. mill) | 11.00 to 11.50 |
| Heavy breakable cast (for steel works) | 16.00 to 16.50 |
| Railroad grate bars | 12.50 to 13.00 |
| Stove plate (for steel works) | 12.50 to 13.00 |
| No. 1 low phos., hvy., 0.04% and under | 19.00 to 20.00 |
| Couplers and knuckles | 18.00 to 18.50 |
| Roller steel wheels | 18.00 to 18.50 |
| No. 1 blast furnace scrap | 10.00 to 11.00 |
| Wrot. iron and soft steel pipes and tubes (new specific.) | 15.50 to 16.00 |
| Shafting | 18.50 to 19.00 |
| Steel axles | 21.50 to 22.00 |
| No. 1 forge fire | 12.00 to 12.50 |
| Cast iron carwheels | 16.50 |
| No. 1 cast | 16.25 to 16.75 |
| Cast borings (for chem. plant) | 15.00 |
| Steel rails for rolling | 17.00 to 17.50 |

Heavy Withdrawals of Copper in 1928

Demand Brought Highest Prices in 4 Years—Stocks Diminished as Industry Absorbed the Metal

Heavy domestic withdrawals of copper made during the latter part of 1928 caused domestic withdrawals for the year to be the highest for all time, with the exception of 1918, according to the United States Bureau of Mines. This was the outstanding feature of the copper industry in 1928.

Demand, followed by the highest prices that had been paid since April, 1923, brought forth a response from the mines in largely increased production. Smelter production from domestic ores increased about 10 per cent during the year. The increased mine production was not made soon enough to save the producers from drawing largely on their stocks of refined copper to satisfy consumption. Hence refined stocks have been depleted during the year from 171,000,00 lb. at its beginning to estimated stocks of 95,000,000 lb. on Dec. 31. The drop in imports of refined copper and the increase in exports caused a further depletion of refined

stocks. Blister stocks also were decreased in 1928.

Smelter production of copper from domestic ores in 1928, as determined by the Bureau of Mines from reports of the smelters showing actual production for 11 months and estimated production for December, was 1,849,000,000 lb., compared with 1,684,000,000 lb. in 1927. The 1928 production was 10 per cent higher than that of 1927, and was the largest peace-time production on record.

Production of new refined copper from domestic sources, determined in the same manner as smelter production, was about 1,763,000,000 lb., compared with 1,719,000,000 lb. in 1927. In 1928 the production of new refined copper from domestic and foreign sources amounted to about 2,470,000,000 lb., compared with 2,326,000,000 lb. in 1927, an increase of 144,000,000 lb., or 6 per cent.

Production of secondary copper by primary refineries increased from 210,000,000 lb. to about 240,000,000

lb. in 1928. Hence the total primary and secondary output of copper by the refineries was nearly 7 per cent higher in 1928 than in 1927, being about 2,710,000,000 lb., compared with 2,536,000,000 lb.

Imports and Exports

Imports of unmanufactured copper during the first 11 months of 1928, according to the Bureau of Foreign and Domestic Commerce, amounted to 699,758,092 lb., a monthly rate of 63,600,000 lb., compared with 718,322,990 lb. for the entire year 1927, a monthly rate of 60,000,000 lb. Total imports for 1928 will likely show an increase in quantity of approximately 50,000,000 lb.

Exports of metallic copper during the first 11 months of 1928 amounted to 1,039,055,909 lb., compared with 1,069,493,121 lb. exported during the entire year 1927.

Higher Production of Trackwork

December production of trackwork is reported by the American Iron and Steel Institute at 11,061 net tons. This is the highest monthly figure since that for July. Following two small months, however, it leaves the quarter at 28,933 tons, the smallest for the year, comparing with 33,583 tons in the third quarter and still higher figures in the first half year.

Total shipments for the year amounted to 139,645 tons—the smallest quantity in a number of years. The figure compares with 160,631 tons in 1927, with 197,005 tons in 1926 and with a recent maximum of 211,662 tons in 1923.

SUPPLY AND WITHDRAWALS OF NEW REFINED COPPER
(In Millions of Pounds)

| | 1927 | 1928 |
|---|-------|-------|
| Refinery production of new copper: | | |
| From domestic sources | 1,719 | 1,763 |
| From foreign sources | 607 | 707 |
| Imports of refined copper (a) | 103 | 70 |
| Stocks of new refined copper, Jan. 1 | 146 | 171 |
| Total supply | 2,575 | 2,711 |
| Exports of refined copper (ingots, bars, rods or other forms) (a) | 981 | 1,028 |
| Stocks Dec. 31 | 171 | 95 |
| | 1,152 | 1,123 |
| Total withdrawn on domestic account | 1,423 | 1,588 |

(a) December, 1928, estimated.

Cincinnati

Heavy Movement of Coke—Scrap Higher on Larger Buying—Sheet Steel Demand Increases

CINCINNATI, Jan. 15.—Aside from an inquiry from the Muncie Malleable Iron Co., Muncie, Ind., for 2500 tons of malleable pig iron, pending business is negligible. Sales in the past week were less than 2000 tons. Despite the lack of buying, prices remain steady. Southern iron is quoted at \$16.50, base Birmingham, southern Ohio foundry at \$18.50 to \$19, base Ironton, and Lake Erie foundry at \$18.50, base furnace. The Martins Ferry furnace is reported to be asking \$21.25, delivered Cincinnati. The American Rolling Mill Co. this week is blowing out its Norton furnace at Ashland, Ky.

Prices per gross ton, deliv'd Cincinnati:
So. Ohio fdy., sil. 1.75 to 2.25 \$20.39 to \$20.89
Ala. fdy., sil. 1.75 to 2.25 20.19 to 20.69
Ala. fdy., sil. 2.25 to 2.75 20.69 to 21.19
Tenn. fdy., sil. 1.75 to 2.25 20.19
S'th'n Ohio silvery, 8 per cent 27.89 to 28.89

Freight rates, \$1.89 from Ironton and Jackson, Ohio; \$3.69 from Birmingham.

Finished Material.—The dullness of the two holiday weeks has been followed by a seven-day period during which specifications and orders for sheet steel have been unusually heavy. Included in the bookings of district mills have been large tonnages from automobile companies in the Detroit district which are increasing production on new models. That sales of specialty grade sheets and of electrical sheets have been brisk is indicated by the fact that a nearby company has two of its manufacturing units making these products booked to capacity for the next four weeks. The American Rolling Mill Co. is operating all of its plants at 100 per cent. Sheet prices are holding firm, with blue annealed at 2.10c., base Pittsburgh, black at 2.85c., galvanized at 3.60c., and automobile body stock at 4.10c. The demand for bars, shapes and plates still is somewhat less than normal, but quotations are firm at 1.90c. to 2c. Activities in structural steel are on a curtailed basis, fresh projects being few. Wire goods are sluggish. Common wire

Warehouse Prices, f.o.b. Cincinnati

| | Base per Lb. |
|---|-----------------------|
| Plates and struc. shapes..... | 3.40c. |
| Bars, soft steel or iron..... | 3.30c. |
| New billet reinfrc. bars..... | 3.15c. |
| Rail steel reinfrc. bars..... | 3.00c. |
| Hoops..... | 4.05c. |
| Bands..... | 3.50c. |
| Cold-fin. rounds and hex..... | 3.85c. |
| Squares..... | 4.35c. |
| Black sheets (No. 24)..... | 3.90c. |
| Galvanized sheets (No. 24)..... | 4.75c. |
| Blue ann'd sheets (No. 10)..... | 3.45c. |
| Structural rivets..... | 3.85c. |
| Small rivets..... | .65 per cent off list |
| No. 9 ann'd wire, per 100 lb..... | \$3.00 |
| Com. wire nails, base per keg..... | 2.95 |
| Cement c't'd nails, base 100 lb. keg..... | 2.95 |
| Chain, per 100 lb..... | 7.55 |
| Net per 100 Ft. | |
| Lap-weld. steel boiler tubes, 2-in..... | \$16.00 |
| 4-in..... | 33.00 |
| Seamless steel boiler tubes, 2-in..... | 17.00 |
| 4-in..... | 34.00 |

nails are being sold by an independent mill at less than \$2.79 per keg, delivered Cincinnati, which is equivalent to \$2.65 at Ironton plus a 14c. barge rate.

Coke.—Demand for by-product foundry coke is so heavy that manufacturers are having difficulty in meeting delivery dates specified by users. Much of the tonnage is going to foundries affiliated with the automobile industry, which have substantially increased operations this month. By-product domestic coke is moving in liberal volume on account of cold weather. Prices of both foundry and domestic grades probably will remain unchanged through February.

Old Material.—District steel plants have bought round tonnages of scrap during the past week and further purchases are expected in the next few weeks. This buying activity has given strength to prices, with the result

that loose sheet clippings and bundled sheets have gone up 50c. a ton. Foundry items also are trending toward higher levels, borings, turnings, machinery cast, stove plate and burnt cast having advanced 50c. a ton. In some cases dealers are willing to pay a top price of \$15 per gross ton for heavy melting steel, but quotations of from \$14.25 to \$14.75 are more representative of the market. The Chesapeake & Ohio and the Louisville & Nashville are offering this week lists of 5500 tons and 6200 tons respectively. Included in these two lists is a total of 4800 tons of rails.

Dealers' buying prices per gross ton, f.o.b. cars, Cincinnati:

| | |
|------------------------------|--------------------|
| Heavy melting steel..... | \$14.25 to \$14.75 |
| Scrap rails for melting..... | 14.00 to 14.50 |
| Loose sheet clippings..... | 10.50 to 11.00 |
| Bundled sheets..... | 11.25 to 11.75 |
| Cast iron borings..... | 10.50 to 11.00 |
| Machine shop turnings..... | 9.75 to 10.25 |
| No. 1 busheling..... | 11.00 to 11.50 |
| No. 2 busheling..... | 7.50 to 8.00 |
| Rails for rolling..... | 15.00 to 15.50 |
| No. 1 locomotive tires..... | 14.25 to 14.75 |
| No. 2 railroad wrought..... | 14.50 to 15.00 |
| Short rails..... | 19.50 to 20.00 |
| Cast iron carwheels..... | 13.00 to 13.50 |
| No. 1 machinery cast..... | 19.50 to 20.00 |
| No. 1 railroad cast..... | 15.50 to 16.00 |
| Burnt cast..... | 10.50 to 11.00 |
| Stove plate..... | 10.50 to 11.00 |
| Brake shoes..... | 10.50 to 11.00 |
| Railroad malleable..... | 15.00 to 15.50 |
| Agricultural malleable..... | 14.00 to 14.50 |

St. Louis

Pig Iron Sold for Second Quarter at Present Prices—Improvement Reported in Steel Bookings

ST. LOUIS, Jan. 15.—The St. Louis Gas & Coke Corporation has opened its books for second quarter pig iron business at the prices prevailing now. Of its sales in the past week of approximately 4000 tons, 500 tons of foundry iron to an Iowa melter and 250 tons of malleable to a California user were for the late delivery. Its principal sale of the week was 2000 tons to a Kentucky melter. All except a small part of the first quarter requirements of melters in this district have been purchased, makers believe. All of the plants in this district which were closed for holidays have resumed operations, with the exception of some of the stove foundries. The market continues firm at unchanged prices.

Prices per gross ton at St. Louis:

| | |
|---|---------|
| No. 2 fdy., sil. 1.75 to 2.25, f.o.b. | |
| Granite City, Ill..... | \$20.00 |
| Malleable, f.o.b. Granite City..... | 20.50 |
| N'th'n No. 2 fdy., deliv'd St. Louis..... | 22.16 |
| Southern No. 2 fdy., deliv'd..... | 20.92 |
| Northern malleable, deliv'd..... | 22.16 |
| Northern basic, deliv'd..... | 22.16 |

Freight rates: 75c. (average) Granite City to St. Louis; \$2.16 from Chicago; \$4.42 from Birmingham.

Coke.—The coke trade is showing a marked improvement. Colder weather has had a stimulating effect on the buying of domestic grades. Melters in the district are unusually busy, resulting in an exceptionally good demand for furnace coke. Foundry coke has improved with the increase in melt.

Finished Iron and Steel.—The Granite City Steel Co. reports a decided improvement in bookings during the

last week. Sheets continue stronger both as to volume and price, and there is a slight improvement in tin plate, with further improvement expected. The demand for plates is heavier than for some time, as a result of recent car awards, which, with pending business, will put that item in a still better position. Lettings of structural steel and reinforcing bars have been light.

Old Material.—The old material market continues quiet, and the expected heavy buying movement by mills has not materialized. There has been some buying, but it has been mostly of specialties, with a fairly large quantity of cast iron borings and shoveling turnings by the leading consumer. Some shoveling and melting steel was sold, but the prices the

Warehouse Prices, f.o.b. St. Louis

| | Base per Lb. |
|---|--------------|
| Plates and struc. shapes..... | 3.25c. |
| Bars, soft steel or iron..... | 3.15c. |
| Cold-fin. rounds, shafting, screw stock..... | 3.75c. |
| Black sheets (No. 24)..... | 4.10c. |
| Galv. sheets (No. 24)..... | 4.95c. |
| Blue ann'd sheets (No. 10)..... | 3.45c. |
| Black corrug. sheets (No. 24)..... | 4.15c. |
| Galv. corrug. sheets..... | 5.00c. |
| Structural rivets..... | 3.75c. |
| Boiler rivets..... | 3.75c. |
| Per Cent Off List | |
| Tank rivets, 7/8-in. and smaller, 100 lb. or more..... | 65 |
| Less than 100 lb..... | 60 |
| Machine bolts..... | 60 |
| Carriage bolts..... | 60 |
| Lag screws..... | 60 |
| Hot-press. nuts, sq., blank or tapped, 200 lb. or more..... | 60 |
| Less than 200 lb..... | 50 |
| Hot-pressed nuts, hex., blank or tapped, 200 lb. or more..... | 60 |
| Less than 200 lb..... | 50 |

melts are willing to pay have been unsatisfactory to the dealers. The latter are buying conservatively. Railroad lists include: Louisville & Nashville, 7500 tons; Missouri-Kansas-Texas, 6450 tons; Southern, 5703 tons; Chesapeake & Ohio, 6141 tons; Wabash, 2440 tons; Chicago, Indiana & Louisville, 975 tons; Ann Arbor, 451 tons; Rock Island, 250 carloads; Great Northern, 135 carloads; Chicago, Milwaukee, St. Paul & Pacific, 28 carloads; Frisco, 15 carloads.

Dealers' buying prices, per gross ton, f.o.b. St. Louis district:

| | |
|---|--------------------|
| No. 1 heavy melting or shoveling steel | \$13.25 to \$13.75 |
| No. 2 heavy melting or shoveling steel | 12.50 to 13.00 |
| No. 1 locomotive tires | 14.50 to 15.00 |
| Miscel. stand.-sec. rails including frogs, switches and guards, cut apart | 15.00 to 15.50 |
| Railroad springs | 16.75 to 17.25 |
| Bundled sheets | 9.50 to 10.00 |
| No. 2 railroad wrought | 13.25 to 13.75 |
| No. 1 busheling | 10.00 to 10.50 |
| Cast iron borings and shoveling turnings | 9.50 to 10.00 |
| Iron rails | 14.00 to 14.50 |
| Rails for rolling | 15.50 to 16.00 |
| Machine shop turnings | 8.00 to 8.50 |
| Heavy turnings | 10.00 to 10.50 |
| Steel car axles | 19.50 to 20.00 |
| Iron car axles | 27.00 to 27.50 |
| Wrot. iron bars and trans. | 22.00 to 22.50 |
| No. 1 railroad wrought | 13.50 to 14.00 |
| Steel rails, less than 3 ft. | 17.00 to 17.50 |
| Steel angle bars | 14.25 to 14.75 |
| Cast iron car wheels | 14.50 to 15.00 |
| No. 1 machinery cast | 16.00 to 16.50 |
| Railroad malleable | 15.50 to 16.00 |
| No. 1 railroad cast | 14.75 to 15.25 |
| Stove plate | 12.50 to 13.00 |
| Agricult. malleable | 13.00 to 13.50 |
| Relay. rails, 60 lb. and under | 20.50 to 23.50 |
| Relay. rails, 70 lb. and over | 26.50 to 29.00 |

Canada

Spot Demand for Pig Iron Increasing

TORONTO, ONT., Jan. 15.—The demand for pig iron is improving in the Toronto and Montreal markets. Some forward contracting was done during the week, but with upward of 80 per cent of those who place quarterly contracts covered to the end of March, business on this account is light. The spot demand, on the other hand, is on the increase. Melts are entering the market in larger numbers and in most instances tonnages ordered exceeded those of the previous three or four weeks. Production of pig iron continues at a high rate, with eight blast furnaces active out of a total of 15 in Canada. No change is reported in prices.

Prices per gross ton:

| Delivered Toronto | |
|-------------------------------|---------|
| No. 1 fdy., sil. 2.25 to 2.75 | \$23.60 |
| No. 2 fdy., sil. 1.75 to 2.25 | 23.60 |
| Malleable | 23.60 |

| Delivered Montreal | |
|-------------------------------|-------|
| No. 1 fdy., sil. 2.25 to 2.75 | 25.00 |
| No. 2 fdy., sil. 1.75 to 2.25 | 25.00 |
| Malleable | 25.00 |
| Basic | 24.00 |

| Imported Iron, Montreal Warehouse | |
|-----------------------------------|-------|
| Summerlee | 33.50 |
| Carron | 33.00 |

Structural Steel.—Structural steel awards in the past week or 10 days were mostly small tonnages. Shipments against old contracts are heavy, however, and all fabricating plants are

well supplied with orders, with capacity operations assured for months. Several new building programs announced since the first of the year indicate large structural steel purchases in the early future. Clearing of the site for the new head office building of the Canadian Bank of Commerce will be started early in February; 8000 tons of steel will be required. Yolles & Rotenberg, Federal Building, Toronto, will erect another building calling for 8000 tons of steel.

Old Material.—An upward trend was noted in business during the past week or 10 days. While some consumers are delaying purchases owing to inventory-taking, many others are coming forward with orders in which

fairly large tonnages are involved. Prices are unchanged.

Dealers' buying prices:

| | Per Gross Ton | |
|-----------------------|---------------|------------------|
| | Toronto | Montreal |
| Heavy melting steel | \$9.50 | \$7.00 to \$7.50 |
| Rails, scrap | 10.00 | 9.00 |
| No. 1 wrought | 9.00 | 11.00 to 11.50 |
| Machine shop turnings | 7.00 | 5.00 |
| Boller plate | 7.00 | 6.00 |
| Heavy axle turnings | 7.50 | 6.50 |
| Cast borings | 7.50 | 5.00 |
| Steel turnings | 7.00 | 5.50 |
| Wrought pipe | 5.00 | 5.00 |
| Steel axles | 14.00 | 20.00 |
| Axles, wrought iron | 16.00 | 22.00 |
| No. 1 machinery cast | 16.00 to | 17.00 |
| Stove plate | 13.00 | 13.00 |
| Standard carwheels | 16.00 | 16.00 |
| Malleable | 13.00 | 13.00 |
| Per Net Ton | | |
| No. 1 machinery cast | 15.00 | .... |
| Stove plate | 9.00 | .... |
| Standard carwheels | 13.00 | .... |
| Malleable scrap | 13.00 | .... |

Pacific Coast

Railroad Bridge Calls for 25,000 Tons of Steel—Gas Pipe Line Project of 27,000 Tons Pending

SAN FRANCISCO, Jan. 12 (*By Air Mail*).—Important developments included the call for bids for the Southern Pacific bridge over the Carquinez Straits, San Francisco, involving 25,000 tons of structural shapes; the inquiry of the Pacific Gas & Electric Co., San Francisco, for 27,000 tons of gas line pipe, and the award of 1380 tons for a hospital in Los Angeles to the Consolidated Steel Corporation.

Pig Iron.—Most sales and inquiries are in small tonnages. Prices are unchanged.

Prices per gross ton at San Francisco:

| | |
|----------------------------------|--------------------|
| *Utah basic | \$25.00 to \$26.00 |
| *Utah fdy., sil. 2.75 to 3.25 | 25.00 to 26.00 |
| **Indian fdy., sil. 2.75 to 3.25 | 24.00 to 25.00 |

*Delivered San Francisco.

**Duty paid, f.o.b. cars San Francisco.

Bars.—A fair tonnage of reinforcing steel was placed during the week, including 400 tons for the Shell Oil Co. plant in Oakland, 355 tons for the Christian Science Rest Home, San Francisco, and 175 tons for a school in the same city, all booked by Soule Steel Co. Inquiries are out for 400 tons for an apartment on North Rossmore Avenue and 120 tons for an apartment on Beverly Boulevard, Los Angeles. Out-of-stock prices in the Los Angeles and San Francisco districts continue at 1.80c., base. On merchant bar material, 2.30c., c.i.f. Coast ports, appears to be firm.

Warehouse Prices, f.o.b. San Francisco

| Base per Lb. | |
|---|--------|
| Plates and struc. shapes | 3.15c. |
| Soft steel bars | 3.15c. |
| Small angles, $\frac{3}{8}$ -in. and over | 3.15c. |
| Small angles, under $\frac{3}{8}$ -in. | 3.55c. |
| Small channels and tees, $\frac{3}{8}$ -in. to 2 $\frac{3}{4}$ -in. | 3.75c. |
| Spring steel, $\frac{1}{4}$ -in. and thicker | 5.00c. |
| Black sheets (No. 24) | 4.90c. |
| Blue ann'd sheets (No. 10) | 3.80c. |
| Galv. sheets (No. 24) | 5.30c. |
| Struc. rivets, $\frac{1}{2}$ -in. and larger | 5.65c. |
| Com. wire nails, base per keg | \$3.40 |
| Cement c'd nails, 100 lb. keg | 3.40 |

Plates.—Bids were opened this week on 95 tons for a riveted pipe line at Terra Bella, Cal.; the Lacy Mfg. Co. was low bidder. Prices continue at 2.25c., c.i.f., which applies even on small lots.

Shapes.—Bookings of structural material this week exceeded 5200 tons, and awards so far this year are more than 3000 tons in excess of the total for the same period a year ago. Among the larger lots were 1250 tons for the Christian Science Rest Home, San Francisco, placed with Herrick Iron Works; 804 tons for a car shed at Richmond for the Santa Fe, awarded to the Judson-Pacific Co., and 750 tons for a plant addition at South San Francisco for the Pacific Coast Steel Co., booked by the owner. A call has been put out by the Southern Pacific Co. for bids to be opened Feb. 16 for the Carquinez Straits bridge. Approximately 25,000 tons will be required. This is the largest structural steel project ever to come up for figures on the Pacific Coast. Plain material remains firm at 2.35c., c.i.f.

Cast Iron Pipe.—H. E. Conner, Redwood City, Cal., took 368 tons of 4 to 8-in. Class B pipe for the improvement of Menalto Park, Redwood City. The Griffith Co. secured 140 tons of 4 to 16-in. Class B pipe for the improvement of Taylor Street, San Diego, Cal. The improvement of Meade Avenue, San Diego, involving 103 tons of 2 to 6-in. Class B pipe, went to Daley Corporation, and the pipe for the improvement of Catocin Drive, San Diego, was placed with Balboa Construction Co. The Pacific States Cast Iron Pipe Co. was low bidder on 1350 tons of 2 to 10-in. Class B pipe for Lomita District No. 13, Los Angeles. Los Angeles will open bids on Jan. 16 for 909 tons of 6-in. Class 350 pipe. Bids have been opened on 278 tons of 18 and 24-in. Class C pipe for a sewage project at Kahului, Hawaii. Imports of cast iron pipe dur-

ing October, 1928, totaled 3015 tons, compared with 1440 tons in September. Of this total, 2618 tons was delivered in the Los Angeles district. In the first 10 months of 1928, more than 22,000 tons was imported, compared with 33,000 tons for the first 10 months in 1927.

Steel Pipe.—Los Angeles opened bids this week on 590 tons of 6-in. seamless pipe. The Standard Oil Co., San Francisco, has placed 226 tons of 8-in. 28-lb. line pipe. An award of 5700 tons of 16-in. and 21,000 tons of 20-in. gas line pipe probably will be made by the Pacific Gas & Electric Co., San Francisco, within the next few days. This pipe is for the Ventura-Bay district gas distributing system. Demand for oil country goods continues active owing to the large amount of wildcatting being done in the Santa Fe Springs fields outside of Los Angeles. Imports of tubular products during October, 1928, totaled 3667 tons, compared with 2090 tons

in September. In the first 10 months of 1928 more than 27,000 tons was imported, compared with 36,000 tons for the first 10 months of the previous year.

Coke.—Imports during October, 1928, were 3916 tons, compared with 7649 tons in September. San Francisco melters took 1250 tons and Seattle foundries 1350 tons. Most of it was English coke. During the first 10 months of 1928 more than 58,000 tons was brought in, compared with 52,000 tons for the corresponding period in 1927.

Warehouse Material.—Movement of out-of-stock material is reported satisfactory for this time of the year and is ahead of the corresponding period in December. The following price reductions have occurred in the San Francisco district: No. 10 gage blue annealed from 3.90c. to 3.80c.; No. 24 gage black sheets from 4.95c. to 4.90c.; No. 24 gage galvanized sheets from 5.40c. to 5.30c.

Birmingham

Pig Iron Melt and Shipments Increasing—Demand for Finished Steel Holds Up Well

BIRMINGHAM, Jan. 15.—The pig iron melt is increasing and shipments show considerable improvement over those of the previous week. There is a little buying. Quotations on No. 2 foundry iron continue at \$16.50 to \$17. There have been no changes in furnace operations since Jan. 1. Of the 20 active furnaces, 10 are on foundry, eight on basic, one on ferromanganese and one on recarburizing iron.

Prices per gross ton, f.o.b. Birmingham dist. furnaces:

No. 2 fdy., 1.75 to 2.25 sil. \$16.50 to \$17.00
No. 1 fdy., 2.25 to 2.75 sil. 17.00 to 17.50
Basic 16.50

Finished Steel.—The market is much stronger than at this time a year ago. The volume of inquiries is holding up well compared with the December average. Prices are steady. Bookings of structural steel fabricators are far ahead of those a year ago. Reinforcing bar manufacturers report a steady volume of small orders. Since the holiday period the Tennessee company has been working seven or eight open-hearth at Ensley and seven at Fairfield. The Gulf States Steel Co. continues with four active at Alabama City.

Cast Iron Pipe.—The cast iron pipe market is again on a small-lot basis following the heavy buying in the first week of January. Denver, Colo., has placed an order for 400 tons, divided equally between the National Cast Iron Pipe Co. and the American Cast Iron Pipe Co. Fresh inquiries are light. Plants have small stocks and shipments are active. Plant operations are about 70 per cent, with a further increase expected in the next few days. Base prices are holding firmly at \$37 to \$36 on 6 in. and larger sizes.

Coke.—Foundry coke specifications have been improving during the past week. Colder weather is bringing out more domestic coke sales. Prices are unchanged from the \$5 base.

Old Material.—Improvement in the market expected to show up at this time has been slow in developing, though the outlook is better. Dealers expect a strong consumer demand within the next week or two. Present prices in some lines are too low to bring out adequate supplies.

Prices per gross ton, deliv'd Birmingham dist. consumers' yards:

| | |
|-----------------------------|------------------|
| Heavy melting steel..... | \$12.50 |
| Scrap steel rails..... | \$12.00 to 12.50 |
| Short shovelling turnings.. | 8.00 to 8.50 |
| Cast iron borings..... | 8.00 |
| Stove plate..... | 13.50 |
| Steel axles..... | 19.00 to 20.00 |
| Iron axles..... | 21.00 to 22.00 |
| No. 1 railroad wrought.... | 10.00 to 10.50 |
| Rails for rolling..... | 14.00 to 15.00 |
| No. 1 cast..... | 15.00 |
| Tramcar wheels..... | 13.00 to 14.00 |
| Cast iron carwheels..... | 13.00 to 13.50 |
| Cast iron borings, chem.... | 13.50 to 14.00 |

Detroit

Manufacturing Operations on an Ascending Scale

DETROIT, Jan. 15.—The industrial employment curve for Detroit reached its low point just before the first of this month, and since then has been climbing at nearly the same rate at which it fell prior to the inventory season. The increase for the week before last was 24,018, while that for last week was 10,154, which brings the total to 278,755—64,454 in advance of the same period a year ago. These figures indicate the number of persons on the combined payrolls of representative firms in this district

whose employees constitute two-thirds of the city's working population.

Manufacturing has consistently shown less seasonal slackening this winter than it has during previous seasons, and will probably advance evenly for the remainder of the first quarter.

Forty per cent of the factories in Jackson, Mich., are working overtime, while Muskegon and Benton Harbor report 10 per cent and 15 per cent overtime, respectively.

The Ford Motor Co. is building up its operating force as rapidly as possible, and putting the entire plant on a six-day basis, using five-day men with six-day machine time. The projected increase in payroll will bring the total for the Detroit plants to 150,000 men. With this additional day, production can be increased at least 6500 cars on the basis of the old schedule.

The Ford Co. of Canada has unfilled orders now on the books for spring delivery in almost the same volume as developed before model A was announced. This company's total schedule for 1929 is set at 140,000 units, which will exceed any previous year by 35,000 units.

December shipments for the Packard Motor Car Co. ran 4300 units, against 3859 in December, 1927. Shipments for the full year were approximately 50,000 units, compared with 36,900 in 1927. Full capacity operation will be the order throughout the winter.

The Willys-Overland Co. turned out 315,000 units during 1928. The production schedule for the first half of this year has been set at 300,000 units, or practically the same figure as the entire 1928 output. The previous record for six months was 200,000 units. December shipments ran approximately 15,000 cars. The January schedule is set at 35,000, with daily production to reach 1500 units this month.

The market on old material in the district has shown considerable activity within the past week, with prices on blast furnace scrap registering advances of 50c. to 75c. per ton. Mills and furnaces have bought quietly within the past two weeks on direct sales and, with the resultant heavy releases, the market has strengthened. Automobile manufacturers are speeding up foundry operations to meet production schedules.

Dealers' buying prices per gross ton, f.o.b. cars, Detroit:

| | |
|-----------------------------------|--------------------|
| Hvy. melting and shov. steel..... | \$14.50 to \$15.00 |
| Borings and short turnings | 9.75 to 10.25 |
| Long turnings..... | 8.75 to 9.25 |
| No. 1 machinery cast..... | 14.00 to 15.00 |
| Automobile cast..... | 19.00 to 20.50 |
| Hydraul. comp. sheets.... | 14.25 to 14.75 |
| Stove plate..... | 11.00 to 12.00 |
| No. 1 busheling..... | 11.00 to 11.50 |
| Sheet clippings..... | 8.50 to 9.00 |
| Flashings..... | 12.50 to 13.00 |

The Superior Steel Corporation, Pittsburgh, has removed its general Eastern sales office to the Fidelity-Philadelphia Trust Building, 123 South Broad Street, Philadelphia.

Boston

Greater Activity in Cast Iron Pipe—Pig Iron Prices Firm— Scrap Prices Still Moving Up

BOSTON, Jan. 15.—Pig iron sales in this territory the past week did not exceed 3000 tons, half of which was sold by the Mystic Iron Works to Connecticut foundries at \$20.50 to \$21 a ton, on cars Everett. A small amount of iron sold is for delivery extending into second quarter, the first such sale to be made this year. Buffalo district and New York State iron prices are firm. Buffalo furnaces are prepared to accept rail and barge shipment orders for second quarter. Indian iron was sold the past week at \$21 and \$21.50 a ton, on dock here, duty paid, for No. 2X. Owing to the recent advance in ocean freights, it is a question how much foreign iron will be landed in Boston in the near future.

Foundry iron prices per gross ton deliv'd to most New England points:

| | |
|----------------------------------|------------------|
| *Buffalo, sil. 1.75 to 2.25.. | \$22.91 |
| *Buffalo, sil. 2.25 to 2.75.. | 23.41 |
| East. Penn., sil. 1.75 to 2.25.. | \$24.15 to 24.65 |
| East. Penn., sil. 2.25 to 2.75.. | 24.65 to 25.15 |
| Va., sil. 1.75 to 2.25..... | 26.91 |
| Va., sil. 2.25 to 2.75..... | 27.41 |
| Ala., sil. 1.75 to 2.25..... | 23.41 to 25.77 |
| Ala., sil. 2.25 to 2.75..... | 23.91 to 26.27 |

Freight rates: \$4.91 all rail from Buffalo; \$3.65 from eastern Pennsylvania; \$5.21 all rail from Virginia; \$6.91 to \$8.77 from Alabama.

*All rail rate.

Coke.—So far this month the movement of by-product foundry coke from ovens to consumers has been just about on a par with that in October, November and December last. As compared with a year ago, it is quite a little larger. The price remains at \$11 a ton, delivered within a \$3.10 freight rate zone. Consumption of domestic coke is breaking all records.

Cast Iron Pipe.—A New England

public utility company has closed on its 1929 pipe requirements, 2000 tons of 6 to 24-in. Two others are negotiating for a total of 5000 tons, various dimensions, and will probably close before Feb. 1. Providence, R. I., closed bids Jan. 14 on 1000 tons of 6 to 16-in. pipe, and Lowell, Mass., will close bids Jan. 17 on 100 tons of 6 and 8-in. Other municipalities intimate they will be in the market earlier than usual this year for 1929 pipe requirements. A representative tonnage was closed privately the past week, individual sales in three instances amounting to several hundred tons. Open quotations on pipe are: 4 in., \$49.10 a ton, delivered common Boston freight rate points; 6 to 16-in., \$44.10; 20-in. and larger, \$43.60. The usual \$3 differential is asked on Class A and gas pipe.

Old Material.—Scrap prices are erratic, with the general tendency still upward. No large lots of material are being moved, however. Shipments are small but steady. In certain materials there are signs of the advance in prices being overdone. T rails, for example, are lower than a week ago, and the holding up of shipments by steel mills has taken some of the edge off the steel turnings market. The buoyancy of forge flashings prices is

ascribed to the fact that consumers are willing to accept such material in place of heavy melting steel at a comparatively small price differential; as high as \$10.75 a ton, on cars shipping point, was paid the past week, although \$10.50 a ton is the limit of most brokers. Steel axles, on direct sales to consumers, sold at as high as \$17.50 a ton, on cars shipping point, but where brokerage is involved \$17 is about the limit paid. Textile machinery cast sold as high as \$16.50 a ton delivered, but that price is exceptional, \$15 a ton being the average top price received. Railroad malleable is scarce and in demand, and probably would bring more than \$17 a ton, delivered, although no sales are reported.

Buying prices per gross ton, f.o.b. Boston rate shipping points:

| | |
|--|--------------------|
| No. 1 heavy melting steel.. | \$12.50 to \$12.75 |
| Scrap T rails | 12.25 to 12.50 |
| Scrap girder rails..... | 11.25 to 11.75 |
| No. 1 railroad wrought.... | 11.50 to 12.00 |
| No. 1 yard wrought..... | 9.00 to 9.50 |
| Machine shop turnings.... | 6.50 to 7.00 |
| Cast iron borings (steel works and rolling mill).. | 6.50 to 6.75 |
| Bundled skeleton, long.... | 9.25 to 9.50 |
| Forge flashings | 9.75 to 10.50 |
| Blast furnace borings and turnings | 6.00 to 6.50 |
| Forge scrap | 8.00 to 8.50 |
| Shafting | 13.00 to 13.50 |
| Steel car axles | 16.50 to 17.00 |
| Wrought pipe 1 in. in diameter (over 2 ft. long) | 11.00 to 11.50 |
| Rails for rolling..... | 13.00 to 13.50 |
| Cast iron borings, chemical | 10.00 to 10.50 |

Prices per gross ton deliv'd consumers' yards:

| | |
|---------------------------|--------------------|
| Textile cast | \$14.50 to \$15.00 |
| No. 1 machinery cast..... | 16.00 to 16.50 |
| No. 2 machinery cast..... | 14.00 to 14.50 |
| Stove plate | 11.00 to 11.50 |
| Railroad malleable | 16.50 to 17.00 |

Buffalo

Steel Mills Extremely Busy—Scrap Market Gains Further Strength and Pig Iron Is Firm

BUFFALO, Jan. 15.—A little interest in second quarter pig iron is shown, and scattering sales of small lots have been made at the prices that are being quoted for the current period. Inquiry has not been heavy. There are four or five inquiries from points east for foundry and malleable. Each of them is for about 500 tons. The American Locomotive Co. bought 500 tons of foundry iron for its Schenectady plant, and smaller sales brought the total bookings to about 5000 tons. Prices are steady at the figures quoted and producers maintain there is no waiving of the differentials in any case. The Hanna Furnace Co. has placed its fourth stack in operation. Bethlehem's Lackawanna plant has five blast furnaces in operation this week as against six in the previous week.

Prices per gross ton, f.o.b. furnace:

No. 2 fdy., sil. 1.75 to 2.25.. \$18.00 to \$18.50
No. 2X fdy., sil. 2.25 to 2.75 18.50 to 19.00
No. 1X fdy., sil. 2.75 to 3.25 19.50 to 20.00
Malleable, sil. up to 2.25.. 18.50 to 19.00
Basic

17.50 to 18.00
Lake Superior charcoal... 27.28

Finished Iron and Steel.—Demand for bars, shapes and plates is steady and prices are firm. Sheet demand is

exceptionally good, with the local maker operating at 90 to 95 per cent of capacity; the run on automobile body sheets is very heavy. Prices are firm at 2.85c. for black and 4.10c. for auto body. Several sizable structural projects are pending. The International Milling Co. has awarded an addition to its Buffalo plant requiring 425 tons of rail steel. The new Cleveland & Buffalo Steamship Co. terminal is practically all structural and requires a round tonnage. The Delaware, Lackawanna & Western terminal addition in Buffalo, which took 500 tons of structural, will require 130 tons of reinforcing bars, and the

Warehouse Prices, f.o.b. Buffalo

| | Base per Lb. |
|-----------------------------------|--------------|
| Plates and struc. shapes..... | 3.40c. |
| Soft steel bars | 3.30c. |
| Reinforcing bars | 2.75c. |
| Cold-fin. flats, sq. and hex..... | 4.45c. |
| Rounds | 3.95c. |
| Cold rolled strip steel..... | 5.85c. |
| Black sheets (No. 24) | 4.20c. |
| Galv. sheets (No. 24) | 4.85c. |
| Blue ann'd sheets (No. 10)..... | 3.50c. |
| Com. wire nails, base per keg.... | \$3.60 |
| Black wire, base per 100 lb..... | 3.75 |

Warehouse Prices, f.o.b. Boston

| | Base per Lb. |
|------------------------------------|-------------------|
| Plates | 3.365c. |
| Structural shapes— | |
| Angles and beams..... | 3.365c. |
| Tees | 3.365c. |
| Zees | 3.465c. |
| Soft steel bars, small shapes..... | 3.265c. |
| Flats, hot-rolled | 4.15c. |
| Reinforcing bars..... | 3.265c. to 3.54c. |
| Iron bars— | |
| Refined | 3.265c. |
| Best refined | 4.60c. |
| Norway rounds | 6.60c. |
| Norway, squares and flats..... | 7.10c. |
| Spring steel— | |
| Open-hearth | 5.00c. to 10.00c. |
| Crucible | 12.00c. |
| Tie steel | 4.50c. to 4.75c. |
| Bands | 4.015c. to 5.00c. |
| Hoop steel | 5.50c. to 6.00c. |
| Cold rolled steel— | |
| Rounds and hex..... | *3.55c. to 5.55c. |
| Squares and flats..... | *4.05c. to 7.05c. |
| Toe calk steel..... | 6.00c. |
| Rivets, structural or boiler..... | 4.50c. |
| Machine bolts | 50 and 5 |
| Carriage bolts | 50 and 5 |
| Lag screws | 50 and 5 |
| Hot-pressed nuts | 50 and 5 |
| Cold-punched nuts | 50 and 5 |
| Stove bolts | 70 and 10 |

*Including quantity differentials.

new county infirmary at Wende, N. Y., 116 tons of reinforcing as well as 100,000 sq. ft. of mesh. The New York Telephone Building addition will require 130,000 ft. of welded fabric, and Erie County roads, to be let within the next few weeks, will require at least 700 tons of reinforcing bars.

Old Material.—The market is the strongest, apparently, that it has been in several years. With close to capacity mill operation in this district, and with the heavy scrap requirements of mills in the Pittsburgh and Valley districts, material is harder to get in this territory than it has been in a long time. Diversion of No. 1 heavy melting steel, No. 2 heavy melting steel and hydraulic compressed, to the outside districts adds to the strength here. A local purchase of heavy melting steel is reported to have been made the past week at \$18. The Pennsylvania Railroad list, which closed within the past few days, brought \$19.65, delivered Pittsburgh, according to reports here. Little or no No. 1 railroad steel is coming to Buffalo mills. Hydraulic compressed is reported to have sold for \$18.50, Youngstown, or \$15.60, Buffalo. Heavy shipments of No. 2 heavy melting steel and hydraulic compressed are going to Weirton, where \$16 to \$16.50 is being offered for the No. 2 and \$18.50

for the hydraulic compressed. Considerable tonnage of cast iron borings is being shipped outside. No. 1 machinery cast is strong, and one sale is reported at \$16.25.

Prices per gross ton, f.o.b. Buffalo consumers' plants:

| Basic Open-Hearth Grades | | |
|--|------------|---------|
| No. 1 heavy melting steel. | \$17.50 to | \$18.00 |
| No. 2 heavy melting steel. | 13.50 to | 14.50 |
| Scrap rails | 16.00 to | 16.50 |
| Hydraul. comp. sheets.... | 15.25 to | 15.50 |
| Hand bundled sheets..... | 12.50 to | 13.00 |
| Drop forge flashings | 14.00 to | 14.50 |
| No. 1 busheling | 16.50 to | 17.00 |
| Hvy. steel axle turnings.... | 14.00 to | 14.50 |
| Machine shop turnings..... | 8.00 to | 8.50 |
| No. 1 railroad wrought.... | 13.00 to | 13.50 |
| Acid Open-Hearth Grades | | |
| Knuckles and couplers.... | 18.00 to | 18.75 |
| Coil and leaf springs..... | 18.00 to | 18.75 |
| Rolled steel wheels..... | 18.00 to | 18.75 |
| Low phos. billet and bloom ends | 18.50 to | 19.00 |
| Electric Furnace Grades | | |
| Short shov. steel turnings. | 12.00 to | 12.50 |
| Blast Furnace Grades | | |
| Short mixed borings and turnings | 11.00 to | 11.50 |
| Cast iron borings | 11.50 to | 12.00 |
| No. 2 busheling..... | 9.50 to | 10.00 |
| Rolling Mill Grades | | |
| Steel car axles..... | 18.75 to | 19.25 |
| Iron axles | 21.00 to | 22.00 |
| Cupola Grades | | |
| No. 1 machinery cast.... | 15.25 to | 16.25 |
| Stove plate | 14.50 to | 14.75 |
| Locomotive grate bars.... | 13.00 to | 13.50 |
| Steel rails, 3 ft. and under. | 18.50 to | 19.00 |
| Cast iron carwheels..... | 13.50 to | 14.00 |
| Malleable Grades | | |
| Industrial | 16.50 to | 17.00 |
| Railroad | 16.50 to | 17.00 |
| Agricultural | 16.50 to | 17.00 |

Fabricated Structural Steel

Railroad Bridge at San Francisco Will Take 25,000 Tons—Awards Total 38,617 Tons, and New Projects, 69,100 Tons

NEW projects brought out during the week totaled 69,100 tons, including 25,000 tons for a bridge over Carquinez Straits near San Francisco for the Southern Pacific Railroad, 15,000 tons for an oil refinery in the Chicago district and 14,100 tons for New York subway work. Awards amounted to 38,617 tons, the largest having been an office building at Minneapolis, which took 6000 tons, and a bridge in Beaver County, Pa., requiring 4700 tons. Awards follow:

BOSTON, 110 tons, Boston Elevated Railway garage, to New England Structural Co.
 BOSTON, 1000 tons, Massachusetts General Hospital, to Harris Structural Steel Co.
 NEW YORK, 172 tons, two channel barges for Fox Brothers & Co., for export, to Jones & Laughlin Steel Corporation.
 NEW JERSEY STATE HIGHWAY COMMISSION, 1000 tons, bridge over Overpeck Creek, to Phoenix Bridge Co.
 PHILADELPHIA, 5500 tons, Reading Railroad grade crossing elimination at Manayunk, to Phoenix Bridge Co.
 ATLANTIC CITY, N. J., 500 tons, addition to Haddon Hall, to Bethlehem Steel Co.
 HERSHEY, PA., 1800 tons, community house for Hershey Lumber Co., to Belmont Iron Works.
 BEAVER COUNTY, PA., 4700 tons, bridge from Rochester to Monaca, to American Bridge Co.
 BALTIMORE, 300 tons, highway bridge, to American Bridge Co.
 CLEVELAND, 350 tons, plant addition for Bourne-Fuller Co., to Massillon Bridge & Structural Co.
 CANTON, OHIO, 800 tons, building for Central Alloy Steel Corporation, to McClintic-Marshall Co.

BUFFALO, 500 tons, Delaware, Lackawanna & Western terminal addition, to R. S. McMannus Steel Corporation.
 DETROIT, 2120 tons, plant building No. 23 for Fisher Body Corporation; from J. A. Utley Co., general contractor, to Massillon Bridge & Structural Co.
 DETROIT, 2000 tons, Detroit airport, to Whitehead & Kales Co.
 STATE OF ILLINOIS, 200 tons, highway bridge work, to Illinois Steel Bridge Co., Jacksonville, Ill.
 STATE OF ILLINOIS, 300 tons, bridge work, to Vincennes Bridge Co., Vincennes, Ind.
 CHICAGO, 750 tons, two public schools, to Wendnagel & Co., local.
 OAK PARK, ILL., 400 tons, Medical Arts building, to unnamed Chicago bidder.
 JOLIET, ILL., 1900 tons, bridge for Rock Island Railroad, to American Bridge Co.
 MOUNT VERNON, ILL., 995 tons, Mount Vernon Car Mfg. Co., to McClintic-Marshall Co.
 MINNEAPOLIS, 6000 tons, Northwest Trust building, to Minneapolis Steel & Machinery Co.
 MILWAUKEE, 485 tons, addition to Boys' Technical High School, to Hackendahl & Schmidt Co., local.

MILWAUKEE, 510 tons, addition to South Division High School, to A. F. Wagner Iron Works, local.
 ALTURAS, CAL., 1000 tons, sawmill for Pickering Lumber Co., to Worden-Allen Co., Milwaukee.
 SAN FRANCISCO, 180 tons, school warehouse, to Dyer Brothers.
 SAN FRANCISCO, 1250 tons, Rest Home for Christian Science Church, to Herrick Iron Works.
 SOUTH SAN FRANCISCO, 750 tons, bolt, nut and rivet plant for Pacific Coast Steel Co.; company to do its own fabricating.
 EMERYVILLE, CAL., 150 tons, addition to Paraffine Co. plant, to Moore Dry Dock Co.
 RICHMOND, CAL., 804 tons, car shed for Santa Fe, to Judson-Pacific Co.
 ANTIOCH, CAL., 150 tons, converting plant for Fibreboard Products Co., to Herrick Iron Works.
 SAN PEDRO, CAL., 110 tons, wharf shed, berth 174, to Minneapolis Steel & Machinery Co.
 FRESNO, CAL., 300 tons, 130 steel poles for San Joaquin Light & Power Co., to Pacific Coast Steel Co.
 GREENDALE, CAL., 150 tons, hangar, to Pacific Iron & Steel Co.
 LOS ANGELES, 1380 tons, hospital on Fountain Street, to Consolidated Steel Corporation.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

STATE OF CONNECTICUT, 100 tons, highway bridge.
 NEW YORK, 500 tons, building for New York Central Railroad.
 NEW YORK, 300 tons, alterations to Queensborough Bridge.
 BROOKLYN, 14,100 tons, sections 1 and 2, route 110, of municipal subways; bids Feb. 5.
 BEACON, N. Y., 1000 tons, bakery.
 PHILADELPHIA, 12,000 tons, Reading Commercial Building; contract to William Steele Sons & Co., Philadelphia.
 MONTREAL, 500 tons, office building for Canadian International Paper Co., Ltd.
 VERDUNE, QUE., 150 tons, Y. M. C. A.
 LACHINE, QUE., 150 tons, office building for Dominion Engineering Works.
 LONDON, ONT., 125 tons, building for Supersilk Hosiery Mills.
 CLEVELAND, 600 tons, Louis Agassiz and Robert Fulton schools; new bids being received.
 CLEVELAND, 250 tons, fruit auction building for Nickel Plate Development Co.
 NICKEL PLATE RAILROAD, 115 tons, bridge at Avery, Ohio.
 STATE OF TENNESSEE, 1400 tons, highway bridges.
 LAPORTE, IND., 300 tons, gymnasium and auditorium.
 DEPUÉ, ILL., 600 tons, building for Mineral Point Zinc Co.
 CHICAGO DISTRICT, 15,000 tons, refinery for Empire Oil & Gas Co.
 CHICAGO, 6000 tons, South Robey Street bridge.
 SOUTHERN PACIFIC CO., 1600 tons, bridges.
 CHEYENNE, WYO., 1500 tons, viaduct over Union Pacific tracks.
 ST. LOUIS, 115 tons, factory for Hinde & Dauch Paper Co., to Massillon Bridge & Structural Co.
 SOPER, OKLA., 550 tons, highway bridge.
 SAN FRANCISCO, 25,000 tons, bridge over Carquinez Straits for Southern Pacific Co.; bids Feb. 16.
 PITTSBURG, CAL., 125 tons, hotel, bids opened.

Non-Ferrous Metal Markets

Copper Quiet But Very Firm —Tin Not Very Active With Prices Steady — Lead and Zinc Quiet at Unchanged Prices

NEW YORK, Jan. 15.

Copper.—Quotations for both electrolytic and Lake copper continue very firm and unchanged, but there is a decided lull this week in buying by both foreign and domestic consumers. Sales for export have been larger than domestic for this month, the total foreign being estimated at over 30,000 gross tons. Buying by domestic consumers has been on a much smaller scale. It is stated that foreign consumers must still buy about 100,000 tons to cover their normal requirements through April, and similar purchases by domestic consumers must be at least 50,000 tons. Not

| THE WEEK'S PRICES. CENTS PER POUND FOR EARLY DELIVERY | | | | | | |
|---|-----------|-----------|-----------|-----------|-----------|-----------|
| | Jan. 15 | Jan. 14 | Jan. 12 | Jan. 11 | Jan. 10 | Jan. 9 |
| Lake copper, New York..... | 16.87 1/2 | 16.87 1/2 | 16.87 1/2 | 16.87 1/2 | 16.87 1/2 | 16.87 1/2 |
| Electrolytic copper, N. Y.*..... | 16.50 | 16.50 | 16.50 | 16.50 | 16.50 | 16.50 |
| Straits tin, spot, N. Y..... | 49.00 | 49.37 1/2 | .... | 49.37 1/2 | 49.12 1/2 | 49.87 1/2 |
| Lead, New York..... | 6.65 | 6.65 | 6.65 | 6.65 | 6.65 | 6.65 |
| Lead, St. Louis..... | 6.50 | 6.50 | 6.50 | 6.50 | 6.50 | 6.50 |
| Zinc, New York..... | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 |
| Zinc, St. Louis..... | 6.35 | 6.35 | 6.35 | 6.35 | 6.35 | 6.35 |

*Refinery quotation; price 1/4 c. higher delivered in the Connecticut Valley.

much change in the present quiet state of the market is expected in the next week or two unless concerted buying should appear from some quarter. Electrolytic copper for delivery through April is quoted at 16.75c., delivered in the Connecticut Valley, with the official price of Copper Exporters, Inc., 17c., c.i.f. European ports. Lake copper is quoted firm at 16.75c. to 16.87 1/2c., delivered. Statistics for December showed an increase of about 13,000 tons in stocks of refined metal, which is considered by no means large under present conditions. Specifications on contract continue very heavy, with refineries pushed to meet demands and with the books of consumers well filled ahead.

Tin.—The week has been dull and uninteresting, with demand light. Sales of Straits tin for the week

ended Saturday, Jan. 12, were about 800 tons, with the volume of sales of standard tin on the National Metal Exchange at a low point. Demand from consumers has been small and there has been less trading by dealers. There has been very little change in the general level of prices of spot Straits, which today was quoted at 49c., New York, in a very dull market. London prices today were lower than a week ago, with spot standard quoted at £222 15s., future standard at £222 12s. 6d. and spot Straits at £224. The quotation at Singapore today was £224 7s. 6d. It is expected that deliveries into consumption in January will be unusually large, possibly as high as 7500 to 8000 tons; in December these deliveries were 7155 tons. These expectations are based on the present operation of the tin plate

Metals from New York Warehouse Delivered Prices Per Lb.

| | |
|--|--------------------|
| Tin, Straits pig..... | 51.75c. to 52.75c. |
| Tin, bar..... | 53.75c. to 54.75c. |
| Copper, Lake..... | 17.75c. |
| Copper, electrolytic..... | 17.50c. |
| Copper, casting..... | 17.25c. |
| Zinc, slab..... | 7.50c. to 8.00c. |
| Lead, American pig..... | 7.50c. to 8.00c. |
| Lead, bar..... | 9.50c. to 10.00c. |
| Antimony, Asiatic..... | 12.00c. to 13.00c. |
| Aluminum No. 1 ingots for remelting (guar'nt'd over 99% pure)..... | 25.00c. to 26.00c. |
| Alum. ingots, No. 12 alloy..... | 24.00c. to 25.00c. |
| Babbitt metal, commerc'l grade..... | 30.00c. to 40.00c. |
| Solder, 1/2 and 1/2..... | 33.00c. to 34.00c. |

Metals from Cleveland Warehouse Delivered Prices Per Lb.

| | |
|----------------------------------|------------------|
| Tin, Straits pig..... | 54.50c. |
| Tin, bar..... | 56.50c. |
| Copper, Lake..... | 18.00c. |
| Copper, electrolytic..... | 18.00c. |
| Copper, casting..... | 17.75c. |
| Zinc, slab..... | 8.00c. |
| Lead, American pig..... | 7.25c. to 7.40c. |
| Lead, bar..... | 9.75c. |
| Antimony, Asiatic..... | 16.00c. |
| Babbitt metal, medium grade..... | 19.25c. |
| Babbitt metal, high grade..... | 60.00c. |
| Solder, 1/2 and 1/2..... | 34.00c. |

Rolled Metals from New York or Cleveland Warehouse

Delivered Prices, Base Per Lb.

| | |
|--|-------------|
| Sheets— | |
| High brass..... | 21.12 1/2c. |
| Copper, hot rolled..... | 25.87 1/2c. |
| Copper, cold rolled, 14 oz. and heavier..... | 27.12 1/2c. |
| Seamless Tubes— | |
| Brass..... | 26.00c. |
| Copper..... | 26.87 1/2c. |
| Brazed Brass Tubes..... | 29.12 1/2c. |
| Brass Rods..... | 18.87 1/2c. |

From New York Warehouse

Delivered Prices, Base Per Lb.

| | |
|---------------------------------|--------------------|
| Zinc sheets (No. 9), casks..... | 10.00c. to 10.50c. |
| Zinc sheets, open..... | 11.00c. to 11.50c. |

Non-Ferrous Rolled Products

Following an advance of 1/4 c. per lb. on Jan. 8, mill prices on brass and copper products have not been changed in the last week. Lead full sheets are quoted at 10.50c. to 10.75c., base, and zinc sheets at 9.75c.

List Prices, Per Lb., f.o.b. Mill

On Copper and Brass Products, Freight up to 75c. per 100 Lb. Allowed on Shipments of 500 Lb. or Over

| | |
|-------------------------|--------------------|
| Sheets— | |
| High brass..... | 21.25c. |
| Copper, hot rolled..... | 25.87 1/2c. |
| Zinc..... | 9.75c. |
| Lead (full sheets)..... | 10.50c. to 10.75c. |

| | |
|------------------------|-------------|
| Seamless Tubes— | |
| High brass..... | 26.12 1/2c. |
| Copper..... | 27.12 1/2c. |

| | |
|------------------|---------|
| Rods— | |
| High brass..... | 19.00c. |
| Naval brass..... | 21.00c. |

| | |
|--------------------------|-------------|
| Wire— | |
| Copper..... | 18.75c. |
| High brass..... | 21.75c. |
| Copper in Rolls..... | 24.87 1/2c. |
| Brazed Brass Tubing..... | 29.25c. |

Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of Mississippi River and also to St. Louis on shipments to points west of that river.

| | |
|--|---------|
| Sheets, 0 to 10 gage, 3 to 30 in. wide..... | |
| Tubes, base..... | 42.00c. |
| Machine rods..... | 34.00c. |

Old Metals, Per Lb., New York

Buying prices represent what large dealers are paying for miscellaneous lots from smaller accumulators and selling prices are those charged customers after the metal has been properly prepared for their uses.

| | Dealers' Buying Prices | Dealers' Selling Prices |
|--|------------------------|-------------------------|
| Copper, hvy. crucible..... | 14.25c. | 15.50c. |
| Copper, hvy. and wire..... | 14.00c. | 15.00c. |
| Copper, light and bottoms..... | 12.00c. | 13.00c. |
| Brass, heavy..... | 7.75c. | 9.00c. |
| Brass, light..... | 6.50c. | 7.50c. |
| Hvy. machine composition..... | 10.75c. | 11.75c. |
| No. 1 yel. brass turnings..... | 9.50c. | 10.25c. |
| No. 1 red brass or compos. turnings..... | 10.25c. | 11.00c. |
| Lead, heavy..... | 5.25c. | 5.75c. |
| Lead, tea..... | 3.75c. | 4.25c. |
| Zinc..... | 3.25c. | 3.75c. |
| Sheet aluminum..... | 13.50c. | 15.50c. |
| Cast aluminum..... | 11.75c. | 13.50c. |

Rolled Metals, f.o.b. Chicago Warehouse

(Prices Cover Trucking to Customers' Doors in City Limits)

| | |
|---|-------------|
| Sheets— | |
| High brass..... | 21.25c. |
| Copper, hot rolled..... | 25.87 1/2c. |
| Copper cold rolled, 14 oz. and heavier..... | 28.12 1/2c. |
| Zinc..... | 10.00c. |
| Lead, wide..... | 10.55c. |
| Seamless Tubes— | |
| Brass..... | 27.62 1/2c. |
| Copper..... | 28.62 1/2c. |
| Brass Rods..... | 19.00c. |
| Brazed Brass Tubes..... | 29.25c. |

industry at about 95 per cent of capacity and the expanding production in the automobile industry, the two largest consumers of tin.

Lead.—Buying of lead has been normal, but not very heavy the last week and prices are steady at 6.50c., St. Louis, in the outside market. The leading interest still quotes 6.65c., New York, as its contract price. Sales recently have been largely for nearby shipment and not very much February metal has been contracted for. London quotations were down again today and prices are again close to the point where Mexican lead can be imported to advantage.

Zinc.—Conditions are practically unchanged and buying of prime Western zinc is very light. Quotations remain at 6.35c., East St. Louis, or 6.70c., New York. Some lots here and there have been available the past week at about 6.32½c., East St. Louis, but the quantity is said to be limited. A desirable order evidently could not be placed at less than 6.35c. The ore price at Joplin last Saturday was again unchanged at \$40 per ton. Production last week decreased 1400 tons from the week previous and sales increased 1490 tons. Because shipments fell off about 500 tons, stocks in-

creased slightly and are still small at less than 30,000 tons.

Antimony.—In a quiet market, Chinese metal for prompt delivery is quoted today at 9.50c., New York, duty paid, with 9.37½c. asked for futures.

Nickel.—Ingot and shot nickel in wholesale lots are quoted at 35c. and 36c. per lb. respectively. Electrolytic nickel in cathode form is obtainable on the same basis as ingot and shot nickel.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted at 23.90c. per lb., delivered.

Non-Ferrous Metals at Chicago

CHICAGO.—The Chicago non-ferrous metal market is active and prices are strong. The old metal market is steady and prices are unchanged.

Prices, per lb., in carload lots: Lake copper, 16.87½c.; tin, 49.75c.; lead, 6.60c.; zinc, 6.45c.; in less-than-carload lots: antimony, 10.50c. On old metals we quote copper wire, crucible shapes and copper clips, 12.50c.; copper bottoms, 11.25c.; red brass, 10.75c.; yellow brass, 8.25c.; lead pipe, 5c.; zinc, 3.50c.; pewter, No. 1, 27c.; tin foil, 27c.; block tin, 39c.; aluminum, 12c.; all being dealers' prices for less-than-carload lots.

Railroad Equipment

Santa Fe Orders 3300 Freight Cars—Illinois Central Inquires for 2800 and Pere Marquette for 1400

ORDERS for 3300 freight cars placed by the Atchison, Topeka & Santa Fe and 300 automobile cars by the Lehigh Valley featured the week's business. The New York, New Haven & Hartford has been authorized to build 1591 box and 95 caboose cars in its own shops. Important inquiries included 2800 freight cars for the Illinois Central and 1400 for the Pere Marquette. Locomotive inquiries brought out during the week totaled 52, with the promise of an equal number in the near future. Details of the week's business follow:

Atchison, Topeka & Santa Fe has placed orders for 3300 freight cars, in addition to 750 reported ordered last week, which were distributed as follows: 500 box cars with Pressed Steel Car Co., 500 box and 500 refrigerator cars with Pullman Car & Mfg. Corporation, 700 box cars with General American Car Co., 300 box, 425 gondola and 125 caboose cars with American Car & Foundry Co. and 250 gondola cars with Standard Steel Car Co. This road has not yet acted upon its inquiry for 200 flat, 150 sulphur and 100 hopper cars.

Chicago & North Western is inquiring for 100 50-ton gondola cars in addition to 1000 70-ton gondola and 1000 automobile cars for which it inquired recently. This road has also placed 10 4-8-4 type locomotives with Baldwin Locomotive Works.

Missouri Pacific, which recently placed orders for 3000 freight cars, has bought 13 mail and baggage cars from St. Louis Car Co. and 60 caboose, 13 steel baggage, 11 passenger, two cafe-lounge and one cafe-club-coach car from American Car & Foundry Co.

Western Fruit Express has ordered 800 steel underframes for refrigerator cars from Standard Steel Car Co.

Pere Marquette will purchase 1000 box cars and 400 gondola cars, and is considering buying 10 to 15 locomotives.

Illinois Central has made formal in-

quiry for 750 50-ton hopper, 850 70-ton hopper, 200 flat and 1000 automobile cars and 17 eight-wheel switching locomotives.

New York, New Haven & Hartford has been authorized by Interstate Commerce Commission to build in its own shops 1591 box, 95 caboose, 25 flanged and 25 milk cars and to purchase 20 multiple unit cars.

Lehigh Valley has ordered 300 automobile cars from American Car & Foundry Co. and two gas-electric rail-motor and five trailers from Osgood Bradley Car Co.

Canadian National has ordered seven bodies for oil-electric rail motor cars from Canadian Car & Foundry Co. and is inquiring for 15 express refrigerator cars.

Delaware & Hudson is inquiring for three combination baggage and mail cars.

St. Louis-Southwestern has ordered two passenger and baggage rail motor cars from J. G. Brill Co.

General Electric Co., Schenectady, N. Y., is inquiring for two flat cars.

Canadian Pacific is inquiring for 20 2-10-4 type locomotives.

Chesapeake & Ohio is inquiring for 15 eight-wheel switching locomotives.

Kwang Tung Yueh Han, Canton, China, has ordered two 4-8-2 type locomotives from Baldwin Locomotive Works.

International Railways of Central America have ordered two Mikado type

locomotives from Baldwin Locomotive Works.

Island Creek Coal Co., Huntington, W. Va., has ordered one 2-8-0 type locomotive from Lima Locomotive Works, Inc.

Wabash contemplates purchase of 25 to 50 locomotives.

Louisville & Nashville will buy 22 passenger cars.

Bradford Corporation will purchase 100 center-sill construction cars.

Reinforcing Steel

Awards of 2850 Tons—2200 Tons in New Projects

AWARDS of 2850 tons, reported to THE IRON AGE in the last week, included no jobs of outstanding size. New projects up for bids call for nearly 2200 tons. Awards follow:

NEW YORK, 300 tons, subway section; from Rosenthal Engineering & Contracting Co., Inc., general contractor, to Concrete Steel Co.

OSSINING, N. Y., 130 tons, State industrial building, reported placed with Fireproof Products Co.

NEWARK, N. J., 200 tons, laboratory; from Auf-der-Heide Contracting Co., general contractor, to Joseph T. Ryerson & Son, Inc.

BUFFALO, 425 tons of rail steel, addition to International Milling Co. plant, to Buffalo Steel Co.

CHICAGO, 200 tons, St. Thomas School, to Calumet Steel Co.

CHICAGO, 100 tons, Malden Tower apartments, to Olney J. Dean & Co.

MILWAUKEE, 200 tons, two school buildings, to Concrete Steel Co.

LOS ANGELES, 140 tons, specification 1055-W, to Concrete Engineering Co.

OAKLAND, CAL., 100 tons, hospital, East Fourteenth Street, to Soule Steel Co.

OAKLAND, 400 tons, Shell Oil Co. plant, to Soule Steel Co.

CHICO, CAL., 125 tons, normal school, to Soule Steel Co.

SAN FRANCISCO, 355 tons, Rest Home for Christian Science Church, to Soule Steel Co.

SAN FRANCISCO, 175 tons, school on Beach Street, to Soule Steel Co.

Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

BUFFALO, 130 tons, Delaware, Lackawanna & Western terminal addition.

BUFFALO, 700 tons, Erie County highways.

WENDE, N. Y., 116 tons, new Erie County infirmary.

CLEVELAND, 400 tons, four school buildings.

EVANSTON, ILL., tonnage not stated, apartment building at 1515 Hinman Avenue; F. W. Cauley, architect.

CHICAGO, 100 tons, West Hotel; Dublin & Eisenberg, architects.

CHICAGO, 200 tons, building at Randolph and Jefferson Streets; Avery Brundage, contractor.

LOS ANGELES, 400 tons, apartment building at 561 North Rossmore Avenue; bids being taken.

LOS ANGELES, 120 tons, apartment building at 4649 Beverly Boulevard; bids being taken.

Compressed Gas Manufacturers' Association, Inc., 120 West Forty-second Street, New York, will hold its sixteenth annual meeting and dinner on Monday, Jan. 21, at the Hotel Astor, New York.

PERSONAL

ELMER T. MCCLEARY, president Republic Iron & Steel Co., Youngstown, has been elected a director of the combined First National Bank and Dollar Savings Trust Co., Youngstown.

I. A. FOLTZ, for many years in the sales department of the Morse-Rogers Steel Co., Cleveland, has become identified with the Universal Steel Co., Cleveland, in the sale of sheets, strip steel and band iron.

M. A. GORDY, for a number of years engaged as a manufacturers' agent in the sale of machinery and tools at Atlanta, Ga., has been appointed Southeastern district manager for the United States Electrical Tool Co., Cincinnati, and will devote his entire time to that company's products, with headquarters in the Morris Building, Atlanta.

WELLINGTON E. MOORE has been appointed export manager for the Pittsburgh-Des Moines Steel Co., structural steel fabricator, with plants at Pittsburgh and Des Moines, Iowa. His headquarters will be at the New York office, 50 Church Street. Mr. Moore served for many years as technical representative in South America for the American Locomotive Co. and has recently served in New York in a combination export department of a number of manufacturers.

GRANT D. BRADSHAW, president of the Andrews-Bradshaw Co., Pittsburgh, from its organization in 1915 until its consolidation with the Blaw-Knox Co., Pittsburgh, Jan. 1, 1928, is president of Bradshaw & Co., 530 Fourth Avenue, Pittsburgh, which has been formed to specialize in power plant and steel mill equipment. During the last year Mr. Bradshaw has been manager of the Andrews-Bradshaw Division of the Blaw-Knox Co. The new company has recently been appointed representative in the Pittsburgh district for the Copes system of boiler feed control, manufactured by the Northern Equipment Co., Erie, Pa.

HARRY WRIGHT, president of the Consolidated Steel Co., Mexico City, Mex., who has been in New York several days on business, left Saturday, Jan. 12, accompanied by his wife, on the Cunard liner "Carpathia" for an extended trip around the west and east coasts of South Africa.

JOHN W. KEVAN has been named assistant district manager in the New York office of the Jones & Laughlin Steel Corporation, Pittsburgh. Before his transfer to the New York office about 15 years ago, Mr. Kevan was in the steel construction division of the general sales department at Pittsburgh.

ROBERT M. GATES, since 1922 manager of the industrial department of the Superheater Co., 17 East Forty-second Street, New York, has been elected a vice-president of that company. He was graduated from Purdue University in 1907, and after serving as a special apprentice on the Pennsylvania Railroad, he became identified with the Browning Engineering Co., Cleveland, retaining that connection until 1910. During the next few years he had his own engineering office at Cleveland but later was associated with the Thew Shovel Co., Lorain, Ohio, and subsequently served as



ROBERT M. GATES

manager of the Lakewood Engineering Co., Cleveland. He has been active in the American Society of Mechanical Engineers, having been chairman of the committee of meetings and programs for the last two years, and is now a member of the council of that society.

DAVID E. REYNOLDS, who has been assistant purchasing agent, has been named purchasing agent of the Union Railroad and the Bessemer & Lake Erie Railroad, subsidiaries of the United States Steel Corporation, the former the Pittsburgh district interplant system and the latter the ore carrying road from Lake Erie to the Pittsburgh district. Mr. Reynolds succeeds the late William A. Parker and has been in the purchasing department of these railroads for 21 years.

ANDREW TELFER, who has been manager Pittsburgh works, National Tube Co., embracing the Continental, Pennsylvania and Republic departments, has been named assistant general superintendent, National works, McKeesport, Pa. G. A. PASSMORE has been transferred from the Gary works to National works and made chief clerk.

FRANK TOOMEY, formerly president of Frank Toomey, Inc., 127-31 North Third Street, Philadelphia, machinery dealer, has established the Frank Toomey Machinery Co., 130 North Third Street, Philadelphia, and will handle machine tools, electrical equipment, woodworking machinery, boilers, engines, etc. ARTHUR S. DAY, formerly connected with the Day Machinery Co., Buffalo, will be associated with Mr. Toomey in the new company.

LOUIS S. BALDWIN has been appointed general manager of the Antrim Iron Co., Mancelona, Mich., operator of a charcoal pig iron blast furnace and by-product coke plant, succeeding the late R. W. Durrett. Mr. Baldwin was formerly connected with the Struthers Furnace Co., Struthers, Ohio.

WILLIAM BURG, dealer in iron and steel products, with offices at 119 North Third Street, St. Louis, has retired from active business after an association of 58 years with the industry. He began his business career as a clerk at the age of 22 years, and after working for a time as a salesman, he established his own business at St. Louis.

CHARLES K. WEST, manager of the Atlantic district of the General Electric Co., with headquarters at Philadelphia, has been elected a vice-president of the company, in charge of commercial activities in that district. He received his early training with the company at the Charleston, W. Va., office and was later transferred to Philadelphia. He was made assistant district manager in 1922 and district manager the following year. WILLIAM J. HANLEY, whose appointment as commercial vice-president in charge of the Cleveland district was mentioned in THE IRON AGE last week, has been identified with the company and the Thomson-Houston Electric Co., one of its predecessors, since 1888. He has been district manager at Cleveland since 1915.

W. H. T. THORNHILL, who has been Mid-Continent district manager for the Wailes Dove-Hermiston Corporation, with headquarters at Tulsa, Okla., has been appointed sales manager, with headquarters at the home office, 17 Battery Place, New York. He has been succeeded at Tulsa by C. W. COTTON, formerly sales manager of the Standard Steel Works, Kansas City, Mo.

CHARLES M. MILLS has severed his connection with Industrial Relations Counselors, Inc., 165 Broadway, New York, to become general sales manager for the Victaulic Co. of America, 26 Broadway, New York.

J. J. HASBURGH, for the last nine years identified with the Sheffield Steel Corporation, Kansas City, Mo., in the sale of reinforcing steel, has

been appointed manager of sales in that company's reinforcing bar division. **LESTER G. SCHRAUB**, for some years assistant sales manager of the Keystone Steel & Wire Co., Peoria, Ill., has been appointed manager of sales in the wire division of the Sheffield corporation. Mr. Schraub had been with the Keystone company for 17 years.

GEORGE B. TROXELL, formerly research metallurgist Bethlehem Steel Co., Bethlehem, Pa., has been appointed assistant to the manager of sales in the bar and billet division, with headquarters at Bethlehem. He has been with the company since 1916 and has served in various capacities in the operating and metallurgical departments.

ASHLEY P. PECK has been appointed Chicago district sales representative for the Palmer-Bee Co., Detroit, maker of speed reducers, flexible couplings and conveying equipment. Mr. Peck is a graduate of Purdue University and has been active in machinery merchandising for many years. His headquarters will be at 937 Monadnock Block.

BLYTHE J. MINNIER, formerly vice-president and a director of the New York Air Brake Co., New York, has been made president and general manager of the Smith Wheel Co., Inc., Syracuse, N. Y.

ARTHUR F. MOUL, for three years manager of Samuel C. Rogers & Co., Buffalo, makers of machine knife and saw grinders, has been elected secretary and a director of the company. He became associated with the Rogers organization in June, 1924.

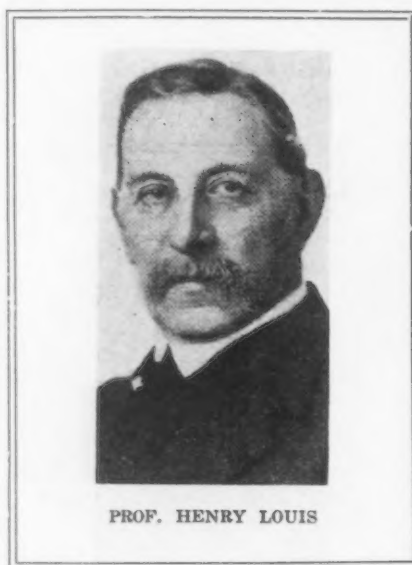
D. EDWARD DANGLER has retired as manager of the plant of the Dangler Stove Co., Cleveland, a division of the American Stove Co., after 50 years of continuous service with that company. He has been succeeded by **EDWARD T. BUTLER**, for 28 years sales manager of the company. Mr. Dangler started in the stove business in 1878 under his father, who was head of the Vapor Stove Co. At that time the name was changed to the Dangler Stove Co., which in 1902 was merged with other companies as part of the American Stove Co. Mr. Dangler has been a member of the executive, sales and finance committees and a vice-president of the American Stove Co.

ARTHUR SOWDEN has been appointed director of aviation sales of the Detroit Steel Products Co., Detroit. The company manufactures doors for airplane hangars. Mr. Sowden is an airplane pilot and stunt flyer, and was formerly engineering officer at Miller Field, Staten Island, N. Y.

W. KING WHITE has been elected president of the Cleveland Tractor

Co., Cleveland, to succeed his father, **ROLLIN H. WHITE**. The former has been treasurer and will continue in that capacity in addition to being the chief executive.

PROF. HENRY LOUIS was nominated as president-elect of the Iron and Steel Institute at the institute's meeting held in Bilbao, Spain, last September. He will succeed Benjamin Talbot at the spring meeting of the institute in London, May 3 and 4. Professor Louis has held the chair of mining at Armstrong College at the University of Durham from 1896 to 1923 and is now emeritus professor



of that university. He is president of the Institute of Mining Engineers of Great Britain, a past-president of the Society of Chemical Industry, and vice-president of the Institute of Mining and Metallurgy in London. In his earlier years he was chemist of the Steel Company of Canada, Nova Scotia, acting also as blast furnace manager. He has been manager of Gold Mines in Ecuador, S. A., and on the Gold Coast. In his capacity as consulting mining and metallurgical engineer, he has visited the United States and South Africa several times. For two years, 1894 and 1895, he managed iron ore mines in Spain, after which he received the appointment to the chair of mining at the University of Durham.

J. R. GORMAN has been elected president of the Transue & Williams Steel Forging Corporation, Alliance, Ohio, succeeding **F. W. TRABOLD**, who was granted a leave of absence three months ago and has since resigned. Mr. Gorman was also made a director and a member of the executive committee. **M. C. SEMOUR** has been elected secretary-treasurer to succeed **HERBERT WOLFE**, who has resigned.

W. B. LOCKWOOD has resigned as secretary, **Edgar T. Ward's Sons Co.**, Pittsburgh, to become affiliated with the Cold Metal Process Co., Youngstown, manufacturer of shim

steel and strip steel stampings. This company also owns the patent on a 4-high, roller bearing mill in which the movement of steel through the rolls is controlled through motor-driven reels located at the end of the mill.

MAJOR G. C. LIGHTNER has been appointed manager of the Glendale, W. Va., plant of the Fokker Aircraft Corporation of America, succeeding **D. V. STRATTON**, who has been transferred to the Hasbrouck Heights, N. J., works to take up other work.

FRANK J. OPATRYN, sales engineer Beardsley & Piper Co., Chicago, will be the speaker at the regular monthly meeting and dinner of the Pittsburgh Foundrymen's Association at the Fort Pitt Hotel, Pittsburgh, Monday evening, Jan. 21. He will talk about sandlingers and will illustrate his talk with moving pictures of installations at several large foundries in various parts of the country.

D. T. HOWELLS is retiring as superintendent of the rail mill at the South Works, Illinois Steel Co., after 43 years of service.

C. G. KINGWILL, superintendent of orders and materials at the Hammond, Ind., plant of the American Steel Foundries, has retired after 30 years of service.

H. F. MOORE, research professor at the University of Illinois, Urbana, spoke before the Indianapolis chapter of the American Society for Steel Treating on Jan. 14, his subject having been "Fatigue of Metals."

J. E. O'LEARY, since 1914 in charge of sales at the New York office of the Pittsburgh-Des Moines Steel Co., Pittsburgh, has been appointed general sales manager of the company, and will take up his new duties about Feb. 1, with headquarters at the Pittsburgh office. **H. W. FORD** succeeds him as manager of the New York office. **G. A. SMITH** will direct the construction and erection activities of the company.

G. L. REEVES, one of the officials of the Reeves Pulley Co., Columbus, Ind., has been elected president of the Columbus Chamber of Commerce.

EDWARD H. TEMPLE, JR., vice-president and general manager of the Aberthaw Co., Boston, has resigned to become associated with **GEORGE A. CRANE** under the firm name of Temple & Crane, Inc., Chamber of Commerce Building, to do a general construction business. Mr. Temple had been with the Aberthaw Co. for 20 years, and Mr. Crane for six years as an estimating engineer.

M. L. DOELMAN, formerly plant superintendent of the National Radiator Corporation, Framingham, Mass.,

is now superintendent of the Gurney Foundry Co., Toronto, Canada.

FRANK L. ESTEP, member of the consulting engineering firm of Perin & Marshall, New York, has returned from a stay of some months in Europe.

★ GEORGE T. LADD is president and treasurer of the Ladd Equipment Co., Farmers Bank Building, Pittsburgh, which was recently organized to act as sales engineering representative of companies manufacturing materials handling and power plant equipment. Associated with Mr. Ladd are ROBERT E. CHEW, who is vice-president and general manager; GEORGE F. BRIGHT, JR., secretary, and JAMES N. BURKE, sales manager. All have been engaged in power plant engineering and equipment sales. The company at present represents C. W. Hunt Co., Inc., West New Brighton, Staten Island, N. Y.; the Vacuum Ash & Soot Conveyor Co., Newark, N. J., and the Sterling Blower Co., Hartford, Conn.

D. A. BARRETT, for many years manager of the Vandergrift and Leechburg, Pa., works, American Sheet & Tin Plate Co., has been made assistant to the vice-president in charge of plant operations. He will make his headquarters in the company's general offices at Pittsburgh, but in his new position will spend much time in plant visitations in connection with operating matters. He has been succeeded as manager of the Vandergrift works by H. L. BOWELL, formerly assistant manager at that plant, while H. E. BRUCE, assistant manager of the Leechburg works, has been made manager. ALEXANDER G. BLACK, who has been superintendent of open-hearth furnaces, Vandergrift works, has been made assistant manager. W. E. KNOX has been named manager of the Wellsville works, succeeding B. J. ROSS, who has retired. O. V. GRAY, who has been superintendent of the plate and jobbing mills at the Gary sheet mill, has been promoted to assistant manager.

E. A. KERBY, for the last three years associated with D. H. Skeen & Co., Chicago, has been appointed Chicago manager of the Midwest Piping & Supply Co., Inc., St. Louis, fabricator and erector of power plant, industrial and oil refinery piping, and will have offices at 208 South LaSalle Street. He is a mechanical engineering graduate of the University of Michigan and has had considerable experience in the power plant equipment field.

A. H. D'ARCAMBAL, consulting metallurgist for the Pratt & Whitney Co., Hartford, Conn., will speak on "Classification of Steel Tools and Also Carbonyl," at a meeting of the New Haven, Conn., chapter of the American Society for Steel Treating to be held at the Hammond Library of

Yale University on Thursday evening, Jan. 17.

C. E. MACQUIGG, director of research Union Carbide & Carbon Research Laboratories, Long Island City, N. Y., addressed the Hartford, Conn., chapter of the American Society for Steel Treating on Jan. 15, his subject having been "Some Present Trends in Engineering Steels."

A. R. WILSON, engineer in charge of bridges and building construction for the Pennsylvania Railroad, with office in Philadelphia, has been appointed to a similar position on the Long Island Railroad, with headquarters in New York.

Obituary

JOY LOVE, president of the Aurora Foundry Co., Aurora, Ill., died at his home Jan. 8. He was born at Aurora 72 years ago and had lived there all his life.

C. EDWIN SEARCH, formerly general works manager and associated for 40 years with the Allis-Chalmers Mfg. Co., Milwaukee, died at St. Petersburg, Fla., on Jan. 10. He had retired five years ago because of illness and had left Milwaukee recently on his customary winter visit in the South. Mr. Search entered the Allis shops at the age of 15, and when he retired in 1924 he was in general charge of all shops. He was born in Milwaukee in 1869.

WILLIAM G. WILLIAMS, for more than 40 years president of the Peerless Foundry Co., Indianapolis, died recently at a hospital in that city, aged 74 years. He was born at Springfield, Mass., and several years later moved with his parents to Columbus, Ohio, and later to Greensburg, Ind. He entered the iron business at Greensburg and in 1900 moved the plant to Indianapolis. He was a member of the Indianapolis Chamber of Commerce and had been actively engaged in business until his death.

CHARLES A. RASSMANN, vice-president of the Vonnegut Machinery Co., Indianapolis, died recently at his home in that city, following a long illness, aged 53 years. He attended Indianapolis public schools and started his business career when 15 years old. Later he became a salesman, and in 1910 became associated with the machinery firm as sales manager and vice-president.

T. UKAI, assistant general manager Mitsui & Co., 65 Broadway, New York, died Jan. 4, at St. Luke's Hospital. He was 45 years of age and had been assistant manager of the company for two years.

BARON KARL VON SKODA, inventor of the howitzer bearing his name, and head of the Skoda Steel Foundry and Munition Works, Pilsen, Czechoslovakia, died on Jan. 11, aged 51 years.

BENJAMIN WHITEHEAD TUCKER, consulting engineer and inventor, died on Jan. 11, at his home at South Orange, N. J., where he had lived since his retirement in 1925. He was a graduate of the Stevens Institute of Technology, Hoboken, N. J., and was best known for the designing of machinery used in manufacture of tobacco products.

JOHN CANDEE DEAN, president and treasurer of the Dean Brothers Co., Indianapolis, maker of pumps and machinery, died recently at his home in that city, aged 83 years. Mr. Dean was the last of the brothers of that name who founded the company at Rome, N. Y., in 1867, and removed it to Indianapolis two years later. The company was incorporated under its present name in 1881. Mr. Dean was born at Deansboro, N. Y., and studied at the Whitestown Seminary, Utica, N. Y., his chief interests having been scientific subjects. He was widely known as a student of astronomy and had written several books on the subject.

CHARLES E. POPE, at one time head of the Pope Tin Plate Co., plant of which now is the Steubenville works, Weirton Steel Co., died at Mercy Hospital, Pittsburgh, Jan. 9. After the sale of the tin plate plant to the Weirton company in 1911, Mr. Pope established the Impervious Varnish Co., and was president of it until his death.

WILLIAM E. FRICK, president Frick-Reid Supply Co., Pittsburgh, pipe distributing subsidiary of the Jones & Laughlin Steel Corporation, died Jan. 8. He founded the Frick-Reid company in 1893 and was its head from organization. He also was a director of the Garland Mfg. Co., West Pittsburgh.

CHARLES F. FUERST, superintendent Crucible Steel Casting Co., Milwaukee, died Jan. 2 after a long illness. He was born in Germany in 1887 and came to Milwaukee as a boy of four.

FREDERICK W. GEDELMAN, assistant general auditor Republic Iron & Steel Co., Youngstown, and identified with that company for 30 years, died on Jan. 5, aged 57 years.

Open competitive examination is to be held by the United States Civil Service Commission for senior physical metallurgist. Applications must be on file with the commission at Washington not later than Jan. 23. The examination is to fill a vacancy in the Bureau of Standards. The entrance salary is \$4,600 a year. Higher-salaried positions are filled through promotion.

Machinery Markets and News of the Works

Inquiries in Large Volume

Despite Falling Off in Orders in December, Trade Looks for Good Demand During Next Few Months

MACHINE tool orders fell off in December, according to the monthly report of the National Machine Tool Builders' Association, but were heavy enough to keep the three months' average still pointing upward. The association's index shows a net falling off of 16 points in the month.

"Continuance of good orders for machine tools," says the association, "has been a sign of actual shortage of high production equipment. Men who get around through the shops know very well that there is still plenty of old equipment being used that should be replaced, even in the machine tool shops. From the proceeds of last year's good business many industries should have a good bit of cash available with which to buy equipment of the modern types during the year 1929. This alone can be taken as a good reason for thinking that for the early part of the year the machine tool industry will have a good market."

New York

NEW YORK, Jan. 15.—Demand for machine tools has kept up at a steady rate since the first of the year. Inquiries are numerous, a situation which local sellers believe indicates a healthy business for some weeks. Inquiries come from widely diversified industries as well as from all sections of the East, including the Buffalo district and New England. The General Electric Co., Schenectady, has bought a number of tools for its refrigerator department. R. Hoe & Co., New York, are expected to place orders this week for a number of lathes.

Pratt & Whitney division of Niles-Bement-Pond Co. last week sold 13 lathes, eight bench lathes, three grinders, two jig borers, two vertical shapers, one bench miller and two centering machines.

Department of Water Supply, Municipal Building, New York, has plans for two-story machine and repair shop, to

Sales of individual tools have been numerous during the past week in nearly all industrial sections. Business is well distributed as to industries and geographically.

The Fisher Body Corporation has been the week's outstanding purchaser. In addition to the tools bought week before last, it ordered a large number of radial drills. A Detroit automobile company has ordered 25 special and standard lathes from a Cincinnati company.

Production in machine tool plants continues at a high rate, and in many instances tool builders are having difficulty in meeting delivery promises. Unfilled orders are sufficiently high to assure a good rate of operation for some time.

Price tendencies are upward. Automatic screw machines have been advanced $7\frac{1}{2}$ per cent, shapers about the same amount, while lathe and drill chucks, formerly quoted at 25 per cent off list, are now 15 per cent off.

cost about \$50,000 with equipment. William Shary, 41 Union Square, is architect.

Kny-Scheerer Corporation has been formed with capital of 1000 shares of stock, no par value, to take over and expand company of same name at 10 West Twenty-fifth Street, manufacturer of surgical instruments, etc. Organizers include Thomas J. McHugh and Edwin H. Koehler.

Tennessee Copper & Chemical Co., 61 Broadway, New York, is considering an expansion program at its main mill at Copperhill, Tenn., with installation of equipment for production of new lines. Bond issue of \$5,000,000 has been authorized, of which about \$3,000,000 will be sold at once, part of fund to be used for purpose noted.

W. F. Doyle, 11 John Street, New York, architect, has filed plans for a multi-story automobile service, repair and garage building, 95 x 175 ft., to cost about \$180,000 with equipment.

State Department of Education, Education Building, Albany, N. Y., is ask-

ing bids until Jan. 31 on general contract, for two-story addition to industrial and agricultural school at Industry, N. Y., to cost about \$200,000 with equipment. William E. Haugaard, 353 Broadway, Albany, is architect.

Colonial Airways Corporation, 270 Madison Avenue, New York, has begun construction of two-story hangar at municipal airport, Albany, N. Y., to include machine shop and other mechanical departments, to cost about \$75,000. This will be first of a series of similar hangars to be constructed by company at different terminal points. George M. Bartlett, 103 Park Avenue, New York, is architect.

Nichols Copper Co., 25 Broad Street, New York, has begun construction of refinery on site lately acquired at El Paso, Tex., to include initial battery of three furnaces, shops, storage and distributing buildings, and administration building, to cost more than \$3,000,000. A. E. Wheeler is company engineer, address noted.

Roovers Brothers, Inc., 100 Schermerhorn Street, Brooklyn, manufacturer of metal embossing machines, tools, dies, etc., has arranged for preferred stock issue to total \$180,000, part of fund to be used for expansion.

Continental Can Co., 1 Pershing Square, New York, has arranged for purchase of plant and business of Manufacturers' Can Co., Harrison, N. J., and will consolidate with organization. Harrison factory will continue in service. Company has also acquired Manhattan Can Co., 882 Third Avenue, Brooklyn, and will also consolidate as unit of organization, continuing operations at factory.

Freas-Therms Electric Co., 1208 South Grove Street, Irvington, N. J., manufacturer of electrical equipment, has awarded general contract to Austin Co., New York, for one-story addition, 90 x 160 ft., to cost over \$50,000 with equipment.

F. H. Koenigsberger, 48 Walnut Street, Newark, architect, has asked bids on general contract for three-story automobile service, repair and garage building at Kearny, N. J., to cost over \$100,000 with equipment.

Board of Education, Hasbrouck Heights, N. J., is said to be planning installation of manual training equipment in new high school to cost about \$475,000, for which plans will be drawn by Tooker & Marsh, 101 Park Avenue, New York, architects.

Porcelain Enamel Metal Products Corporation, Oxford, N. J., occupying a former building of Oxford Steel Co., will carry out expansion program, including additional building and installation of three furnaces and other equipment.

Art Metal Works, Inc., 7 Mulberry Street, Newark, manufacturer of metal automobile ornaments, toys, advertising novelties, etc., is disposing of stock issue to total \$2,520,000, part of proceeds to be used for expansion. Plans are under way for one and two-story addition, for

which bids will soon be asked. Henry Baechlin, 655 Broad Street, is architect.

Standard Underground Cable Co., Seventeenth and Pike Streets, Pittsburgh, a division of General Cable Co., 420 Lexington Avenue, New York, has acquired property, 300 x 600 ft., adjoining plant at Perth Amboy, N. J., and plans construction of new wire and rod mill, to cost more than \$200,000. Portion of equipment at Pittsburgh plant will be removed to that location when buildings are ready. Certain machinery at Pittsburgh works will be transferred also to St. Louis plant, which will be extended. H. V. Wodtke is general manager at Perth Amboy.

Foote Brothers Gear & Machine Co., Chicago, has opened branch office in Woolworth Building, New York, in charge of E. A. Phillips, to serve New England, New York State as far as Rochester and northern New Jersey. New office also will have charge of distribution of tractors, road graders and highway equipment made by Bates Tractor division, Stockland Grader & Road Equipment Co. division, Lyle Culvert & Road Equipment Co. division and Northwestern Steel & Iron Foundry division, companies in which Foote Brothers recently acquired interests.

Tremont Tinsmith & Roofing Supply Co., Inc., 1975 Webster Avenue, New York, has been incorporated for \$20,000 to deal in supplies for sheet metal workers, contractors, etc. Warehouse, 50 x 100 ft., has just been completed.

Guardian Mfg. & Supply Corporation, 11 Broadway, New York, has been formed to take over assets and business of Consolidated Supply Co. and will manufacture safety equipment and appliances for electrical industry. Majority of appliances are manufactured on contract but company is in market for limited amount of materials and equipment. Contract has recently been given to Shaw Insulator Co., 150 Coyt Street, Irvington, N. J., for manufacture of patented safety lamp guard device for utility industry. Jerome B. Rockhill is president.

Household Metal Products Co., Inc., 380 Throop Avenue, Brooklyn, has been formed to make steel radiator enclosures and is in operation. Later company expects to add other lines of products. Materials are purchased through local jobbers.

Philadelphia

PHILADELPHIA, Jan. 14.—Contract has been let by American Container Co., Shunk Street, Philadelphia, to Raymond Goldstein, Water and Wolf Streets, for three-story plant unit, 60 x 200 ft., to cost about \$180,000 with machinery. H. H. Klein, 709 Chestnut Street, is architect.

International Harvester Co., 2905 North Sixteenth Street, Philadelphia, with headquarters at Chicago, is asking bids until Jan. 23 for two-story service, repair and sales building for motor truck division, 110 x 225 ft., to cost about \$140,000 with equipment.

Board of Education, Nineteenth and Ludlow Streets, Philadelphia, is said to be planning installation of manual training equipment in four-story senior high school at Front and Duncanno Streets, to cost over \$600,000, for which it is expected to ask bids on general contract early in March. Irvin T. Catherine, address noted, is school architect.

New interests, headed by Matthew J.

The Crane Market

A NUMBER of inquiries for electric overhead cranes and locomotives cranes have appeared since the first of the year including a list of four small capacity cranes for a quarry, on which bids are being asked for 1, 2 or 3-motor control. The United Electric Light & Power Co., New York, which is inquiring for a large capacity ash handling crane for its Hell Gate station has closed on 13 trolley hoists. Some inquiry from contractors is reported for locomotive cranes but the railroads continue inactive.

Among recent purchases are:

United Electric Light & Power Co., New York, 13 small trolley hoists for the Hell Gate station from the Wright Mfg. Co. and the Yale & Towne Mfg. Co.

Southern Wood Preserving Co., Atlanta, Ga., 25-ton, used Browning locomotive crane from the Hoisting Machinery Co., New York.

Hudson Valley Lumber Co., Nanuet, N. Y., used 10-ton, 4-wheel, locomotive crane from Forsythe Brothers, New York.

Mare Island Navy Yard, Vallejo, Cal., 5-ton hammer head crane. Low bid by H. R. L. Motor Co., Seattle.

Northwestern Pacific Railroad, Tiburon, Cal., 15-ton overhead travelling crane from Judson-Pacific Co.

United States Navy base at San Diego, Cal., 10-ton overhead traveling crane. Low bidder, Judson-Pacific Co.

Scammell, head of Scammell China Co., Third and Landing Streets, Trenton, N. J., have acquired plant and business of S. L. Allen & Co., Fifth Street and Glenwood Avenue, Philadelphia, manufacturer of garden tools and machinery, sleds, etc., lately controlled by Trenton Trust Co., Trenton. Present company name will be continued and expansion arranged.

Lehigh Valley Coal Co., Wilkes-Barre, Pa., has approved plans for immediate erection of electric-operated coal breaker at properties at Tomhicken, Pa., to cost over \$100,000 with machinery.

Board of Delaware County Commissioners, Media, Pa., is having plans drawn for new central steam power plant, to cost more than \$65,000 with equipment. C. W. Brozer, Crozer Building, Chester, Pa., is architect and engineer.

Polymet Mfg. Co., 599 Broadway, New York, manufacturer of radio equipment, has acquired plant and business of Colliton Electric Mfg. Co., Walters, near Easton Pa., manufacturer of coils and other radio apparatus, and will consolidate. Plans are under way to more than double size of Colliton plant, with installation of additional equipment. Otto Paschkes is president of purchasing company.

Nehl Bottling Works, Scranton, Pa., has plans for immediate construction of one-story plant, totaling about 10,700 sq. ft. floor space, at Green Ridge, a suburb, to include automatic bottling machinery, conveying equipment, etc., to cost about \$30,000.

Phoenixville School Board, Phoenixville, Pa., has authorized appropriation of \$350,000 for new junior high school and plans installation of manual training department; employment of architect to prepare plans has also been ordered.

Pennebacker Co., Emaus, Pa., manufacturer of iron and steel castings, has acquired former local plant of Reading

Iron Co., and will remodel for new plant. Additional equipment will be installed.

Woodworking Machinery Co., Inc., 250 North Eleventh Street, Philadelphia, recently incorporated, has leased plant at Norristown, Pa., and has bought some equipment. Small tools and machine shop equipment are to be purchased and company is also in market for screw machine parts, gray iron castings and labor-saving devices adaptable for general machine-shop work. G. L. Dannehower is president.

General Pipe & Tube Corporation, Broad Street Bank Building, Trenton, N. J., has taken over plant formerly operated by Bordentown Steel & Tube Corporation, Bordentown, N. J. Alterations have been completed and company is ready to begin operations.

Gulf States

BIRMINGHAM, Jan. 14. — Stringer Brothers Co., Gadsden, Ala., manufacturer of plumbing equipment and supplies, is planning addition to plant at East Gadsden, to cost more than \$115,000 with machinery. Headquarters are at 1100 West Thirty-eighth Street, Chicago.

Louisville & Nashville Railroad Co., Louisville, has filed plans for new car and locomotive repair shops near State docks, Mobile, Ala., to cost \$325,000 with equipment, for which building contract has been let to Horace Williams Co., New Orleans.

American Cyanamid Co., 535 Fifth Avenue, New York, has purchased about 500 acres of phosphate lands near Plant City, Fla., and plans new phosphate mining plant, storage and distributing works, to cost more than \$200,000.

Massey-Harris Co., Racine, Wis., manufacturer of agricultural implements and equipment, has leased five-story building at Dallas, Tex., for factory branch and distributing plant. Dallas offices are now at Elm and Market Streets; George W. Pierce is local manager.

Southern Aeronautical Service, Inc., Audubon Building, New Orleans, is planning construction of hangars, repair and reconditioning shops and other buildings at local airport, and will ask bids in 30 to 60 days. Early purchase of machine tools and other equipment is planned. Project will cost about \$85,000.

Missouri Pacific Railroad Co., St. Louis, has asked bids on general contract for one-story car and coach repair shop, 150 x 240 ft., and adjoining unit, 50 x 125 ft., at Kingsville, Tex., to cost about \$150,000, to replace structures recently destroyed by fire. E. A. Hadley is chief engineer.

Goodyear Tire & Rubber Co., Akron, Ohio, has asked bids on general contract for initial unit of branch mill on 275-acre tract at Gadsden, Ala., recently acquired, to be four stories, 400 x 800 ft., to cost more than \$2,500,000 with machinery. Other units will be built later, making entire investment about \$6,000,000. Frank A. Steele, heretofore assistant superintendent at Los Angeles mill, has been appointed superintendent at Gadsden and will be in charge of machinery purchases.

Alabama Power Co., Birmingham, plans expansion and improvements in 1929 to cost about \$17,000,000, including construction of hydroelectric generating plant on lower Tallahassee River, and completion of steam-operated electric power plant on Warrior River, now under way, steel tower transmission lines, and other work. Celotex Co., 645 North Michigan Ave-

nue, Chicago, manufacturer of wallboard, insulating lumber, etc., using cane sugar waste, is planning construction of new unit at plant at Marrero, near New Orleans, to cost over \$750,000 with machinery.

Automatic bottling machinery, mechanical conveying, packing and handling equipment will be installed in new plant to be constructed at Port Arthur, Tex., by Orange Crush Co., 314 West Superior Street, Chicago, consisting of multi-story unit, to cost over \$350,000 with machinery.

El Paso Natural Gas Co., El Paso, Tex., has arranged for sale of additional bond issue of \$1,750,000, part of proceeds to be used for construction of new pipe line from natural gas fields in Lea County, N. M., to El Paso and vicinity, distance of 200 miles. Project will cost over \$4,000,000 with booster stations, etc.

Welded Products Co. of Louisiana, Inc., 410 Camp Street, New Orleans, has been organized to manufacture tanks for bulk storage of gasoline and oils, Underwriters' labeled tanks, dredge pipe, bins and hoppers and do general welded plate work. It is operating in plant of Equitable Equipment Co. and is in market for raw materials including plates, sheets and structural shapes.

Buffalo

BUFFALO, Jan. 14.—Contract has been let by Hickok Mfg. Co., 299 State Street, Rochester, N. Y., manufacturer of leather belts, to Gorsline & Swan Construction Co., Powers Building, for one-story addition, to cost more than \$200,000 with machinery. S. Firestone, 59 South Street, is engineer.

Harry C. Gilbert, 380 Yarmouth Road, Rochester, and associates have organized Gilbert Appliance Co., and plan early operation of plant to manufacture electrical and mechanical appliances. Avery S. Gilbert, 29 Birch Crescent, is also interested in new company.

Jamestown Street Railway Co., Jamestown, N. Y., is said to be planning to rebuild part of car shop recently destroyed by fire.

Board of Education, Malone, N. Y., contemplates installation of manual training equipment in two-story high school to cost about \$550,000, for which bids are being asked on general contract until Jan. 22. Fuller & Robinson, 95 State Street, Albany, N. Y., are architects.

Dry Ice Corporation of America, Inc., 50 East Forty-second Street, New York, has awarded general contract to H. K. Ferguson Co., Cleveland, for one-story plant, 100 x 180 ft., at Niagara Falls, N. Y., to manufacture freezing material made with carbon dioxide, to cost more than \$100,000.

City Council, Buffalo, has authorized appropriation of \$500,000 for expansion in municipal airport at Cheektowaga, including construction of new hangars, repair and reconditioning shops, and other buildings. Department of Public Works, George F. Flisk, commissioner, in charge.

Adams & Dony, 143 Cutler Building, Rochester, has changed firm name to D. E. Dony.

Lowville Machine & Vise Co., Lowville, N. Y., has sold patents and stock of vises and air compressors to American Chain Co., Bridgeport, Conn., but will continue general foundry business and manufacture castings and parts for purchasing company. Lowville company is successor to Fulton Machine & Vise Co. and last

year purchased patents and business of Utica Air Compressor Co., Utica, N. Y.

Carbo Engineering Corporation, Genesee Building, Buffalo, has been organized to produce Carbo combustion system in United States, heretofore manufactured in Canada. Company will not erect plant, but will have system made by other companies under contract.

Detroit

DETROIT, Jan. 14.—Contract has been let by Kelsey Wheel Co., Inc., 6100 McGraw Avenue, Detroit, manufacturer of automobile steel wheels, to Everett Winters Co., 1651 East Grand Boulevard, for two-story addition to cost about \$60,000 including equipment.

Hayes-Ionia Co., Ionia, Mich., manufacturer of automobile bodies, operated by Hayes Body Corporation, Grand Rapids, Mich., has awarded general contract to Owen-Ames-Kimball Co., Grand Rapids, for addition to cost about \$100,000 with equipment. A new conveyor system will be installed.

Almont Mfg. Co., Almont, Mich., manufacturer of metal castings, is planning a one-story foundry addition to branch plant at Imlay City, to cost about \$30,000 with equipment.

Cartwright Die & Tool Co., 2962 Hart Avenue, Detroit, has plans for a one-story addition to cost about \$40,000 with equipment. Pollmar & Ropes, 2539 Woodward Avenue, are architects.

Packard Motor Car Co., East Grand Boulevard, Detroit, has plans for four-story addition, 115 x 420 ft., to cost over \$400,000 with equipment. Albert Kahn, Inc., Marquette Building, is architect and engineer.

Officials of Standard Malleable Iron Co., Muskegon Heights, Muskegon, Mich., are completing plans for organization of a subsidiary, Standard Self-Lock Nut Co., which will operate local plant for manufacture of patented self-locking nuts and kindred equipment. William R. McCullom will be vice-president, in charge. Andrew Wierengo is president of parent organization.

Federal Motor Truck Co., 5780 Federal Avenue, Detroit, has taken bids on general contract for two-story addition, to cost about \$200,000 with equipment. Frederick J. Winter, Book Tower Building, is architect.

Murray Body Corporation, Russell Street, Detroit, has plans for a power house, 40 x 75 ft., to cost about \$60,000 with equipment. Albert Kahn, Inc., Marquette Building, is architect and engineer.

All-Metal Products Co., Wyandotte, Mich., is considering one-story addition, 125 x 500 ft., to cost about \$175,000 with equipment.

James Neon Lights, Inc., Elm Street, Battle Creek, Mich., manufacturer of electric lighting equipment, is considering two-story addition, to cost more than \$35,000 with equipment.

Detroit Container Corporation, Detroit, recently organized to manufacture corrugated shipping cases, etc., will operate initial plant on South Harbaugh Street, totaling 25,000 sq. ft. floor space.

Autopulse Corporation, 2821 Brooklyn Avenue, Detroit, has been organized to manufacture electric fuel pump for feeding gasoline to carburetor. Present needs for materials and equipment have been taken care of.

Lansing Steel Corporation, Lansing, Mich., has been formed to operate structural iron and steel fabricating shop.

Company has been in operation for six months, but is in market for materials and additional equipment.

General Refractories Co., Philadelphia, has removed its Detroit office to 6-230 General Motors Building. J. L. Graham is in charge.

General Foundry & Machine Co., box 47, Flint, Mich., has been formed as consolidation of Flint Malleable Castings Co., Flint Foundry Co. and General Foundries, to make castings for automobile parts manufacturers. Some additional products are being developed. Machine shop and galvanizing and plating departments will soon be in operation. J. M. Barringer is president.

Cincinnati

CINCINNATI, Jan. 14.—Machine tool sales have shown further improvement the past week, and bookings this month will exceed those in December by a considerable margin. Much of the business is coming from the Detroit district, which is by far the biggest factor in the market. The Fisher Body Corporation has purchased a large number of radial drills in addition to tools bought a week ago, and other orders are expected to be placed soon. A Detroit automobile maker has contracted with a local builder for 25 standard and special engine lathes costing between \$75,000 and \$85,000. Other automobile manufacturers have been buying small quantities of tools which, considered in the aggregate, total a fairly liberal volume. In most cases these transactions are for special or semi-special machines for single-purpose work.

Pending inquiries indicate that transactions during the remainder of the month will be of sizable proportions. Production in local machine tool shops continues at a high level. Some plants are operating at capacity with certain departments working at night, and there are instances in which considerable work is being done by outside shops so that builders can meet delivery dates. Unfilled orders are at a sufficiently high level that the present scale of production should be sustained indefinitely.

Superior Stamping Co., Second and Elm Streets, Cincinnati, has moved its plant to 216-226 Commerce Street.

Capital Die, Tool & Machine Co., 619 North Fourth Street, Columbus, Ohio, designer and manufacturer, has moved plant to 446 East Fifth Street. R. B. Ralston is president.

Crosley Radio Corporation, Colerain and Sassafras Streets, Cincinnati, is planning eight-story addition to present six-story factory, to cost about \$500,000 with machinery.

Columbus Heating & Ventilating Co., 425 West Town Street, Columbus, Ohio, G. C. Bowman, president, has awarded general contract to Boyajohn & Barr, 299 South Park Street, for three-story unit, to cost about \$40,000 with equipment.

Rome Co., Fourth and Goodale Streets, Columbus, Ohio, manufacturer of metal bedsteads, etc., is planning to rebuild factory branch and distributing plant recently destroyed by fire. Headquarters are at Rome, N. Y.

Oliver King Sand & Lime Co., Knoxville, Tenn., is planning an expansion and improvement program, including installation of new floating screen mill, machine shop, boilers and power equip-

ment, material-handling equipment, etc., to cost more than \$80,000.

Knoxville Gas Co., Knoxville, Tenn., is planning extensions and improvements in artificial gas plant, to cost about \$130,000 including equipment.

Hart Mfg. Co., 2006 High Street, Louisville, manufacturer of heating equipment, furnaces, etc., has purchased local plant and business of Peerless Mfg. Co., manufacturer of stoves, parts, and kindred equipment, and will consolidate. Expansion in output is planned.

Cincinnati Sheet Metal & Roofing Co., 226 East Front Street, Cincinnati, will rebuild part of plant destroyed by fire Jan. 9.

Springfield Aluminum Plate & Casting Co., Springfield, Ohio, is considering one-story addition, to cost more than \$40,000 including equipment.

Louisville Frog & Switch Co. and Southern Signal Corporation, Louisville, Ky., for some time under same owners and directors, have been merged and hereafter will be known as Louisville Frog Switch & Signal Co., with main office at Thirtieth and High Streets, Louisville. No changes in products or personnel will be made.

Pittsburgh

PITTSBURGH, Jan. 14.—In addition to a steady flow of single tool orders, machinery dealers are encouraged by the prospect of some large projects soon becoming active. Among these is the program at the National works of the National Tube Co., McKeesport, Pa., where \$20,000,000 is to be spent in modernizing the plant and more than \$250,000 on equipment for a new machine shop. Dealers are submitting quotations on the quarterly list of the Westinghouse Electric & Mfg. Co., which is heavy, due to the fact that most of the items in the list for the last quarter of last year were carried over.

Blaw Knox Co., Pittsburgh, has acquired W. H. French Co., Chicago, manufacturer of road building machinery, including Ord road finishing machine, which will supplement the line of road building equipment of Blaw-Knox Co.

United States Sanitary Mfg. Co., Arrott Building, Pittsburgh, plans one-story addition to plant at Monaca, Pa., 75 x 130 ft., to cost over \$50,000 with equipment.

Pittsburgh Plate Glass Co., Frick Building, Pittsburgh, has awarded contract to McClintic-Marshall Co., Oliver Building, for complete unit at branch plant at Crystal City, Mo., to manufacture laminated sheet glass for automobiles, to cost about \$5,000,000 with machinery.

Righter-Overland Co., 621 Seventh Street, Parkersburg, W. Va., local representative for Overland and Whippet automobiles, has purchased local property for service, repair and garage building, to cost about \$100,000 with equipment.

Pennsylvania Railroad Co., Broad Street Station, Philadelphia, has awarded general contract to Crossan Construction Co., Brownsville, Pa., for addition to engine house and locomotive repair shops at Benwood, W. Va., to cost about \$85,000 with equipment.

South Atlantic

BALTIMORE, Jan. 14.—Plans are being drawn by Julian L. Friez & Sons, Baltimore and Central Avenues, Baltimore, manufacturers of engineering and aeronautical instruments, for two-story addition to Belforte works, to cost \$70,000 with equipment. E. H. Glidden, Jr., American Building, is architect. Company has recently become affiliated with Consolidated Instrument Co. of America, Ltd., 305 East Forty-seventh Street, New York, and Moulded Insulation Co., Mount Vernon, N. Y., recently merged. Consolidated company is arranging for stock issue, part of fund to be used for expansion.

Power equipment, ovens, conveying and other machinery will be installed in new baking plant, storage and distributing building, to be erected by J. W. Crook Stores Co., Guilford Avenue, Baltimore, to cost about \$130,000.

Town Council, Danville, Va., has acquired tract of 100 acres and plans establishment of municipal airport, including hangars, repair and reconditioning shops and other buildings.

Asiatic Petroleum Co., Ltd., 65 Broadway, New York, has asked bids on revised plans for second unit of oil storage and distributing plant near Wagner's Point, Fairfield, Baltimore, to cost about \$100,000 with equipment. Company is a subsidiary of Royal-Dutch-Shell Corporation.

Edward Katzinger Co., 1949 North Cicero Avenue, Chicago, manufacturer of bakers' machinery, has taken bids on general contract for two-story branch plant at Baltimore, 145 x 180 ft., to cost about \$250,000 with equipment. Lockwood, Greene & Co., 400 North Michigan Avenue, Chicago, are architects and engineers.

South Boston Machine & Foundry Co., South Boston, Va., has acquired additional property and plans one-story foundry to cost over \$25,000 with equipment.

Bradley Lumber Co., Greenwood, S. C., has plans for new mill, including boiler house, machine department, planing mill and other buildings at St. Matthews, S. C., to cost over \$75,000 with equipment. E. W. Milford is president.

Motoramp Garages of Maryland, Inc., 208 Water Street, Baltimore, has plans for a multi-story service, repair and garage building, to cost more than \$400,000 with equipment.

Brunswick Terminal & Railway Co., Brunswick, Ga., has secured substantial interest in Georgia Manganese Co., comprising more than 1000 acres. Plans are being considered for extensions in plant and mining facilities, with installation of crushing and grinding machinery, conveying and other equipment. Company has also secured block of stock of American Minerals Corporation, 165 Broadway, New York, which is interested in Georgia company.

Electric Storage Battery Co., 294 West Peachtree Street, N. W., Atlanta, Ga., with headquarters at Nineteenth Street and Allegheny Avenue, Philadelphia, manufacturer of storage batteries, coils, etc., has leased two-story and basement building, 60 x 100 ft., to be erected at Walker and Fair Streets, N. W., for factory branch and distributing plant, to cost about \$75,000 with equipment. E. C. Slez, 15 Poplar Street, Atlanta, is architect.

Alexander Milburn Co., Baltimore, has organized Milburn Sales Corporation and Milburn Paint Spray Corporation to carry on sale of company's products. Milburn Sales Corporation takes over

sale of all equipment made by company except paint spray equipment and air guns for greasing purposes, which will be sold by Milburn Paint Spray Corporation, and will be concerned with welding and cutting apparatus, generators and compressors and portable lights. Alexander F. Jenkins will be president and treasurer of both new companies; Edward P. Boyer, vice-president, and Louis J. Herzog, secretary of Milburn Sales Corporation, and Robert M. Zimmermann, secretary of paint spray company.

St. Louis

ST. LOUIS, Jan. 14.—Plans are being considered by Yunker Aircraft Corporation, Dodge City, Kan., George Yunker, president, for one-story airplane plant, including parts and assembling departments, to cost more than \$35,000 with equipment.

Board of Education, St. Joseph, Mo., plans installation of manual training equipment in new senior and junior high school to cost more than \$700,000. A fund of \$2,180,000 has been approved for this and other schools. William B. Ittner, Board of Education Building, St. Louis, is architect.

J. B. Klein Iron & Foundry Co., 1006 West Second Street, Oklahoma City, Okla., has plans for one-story machine shop and foundry, to cost about \$65,000 with equipment. C. J. Thieband, Oklahoma City, is architect.

Empire Pipe Line Co., Bartlesville, Okla., subsidiary of Empire Companies, Inc., Bartlesville, is planning construction of pipe line from Cimarron, near Guthrie, Okla., to point near Oklahoma City, about 35 miles, to cost over \$300,000 with storage and distributing facilities, including electrically-operated field station near last-noted place.

Missouri Casket Co., Kansas City, Mo., has plans for three-story plant at Omaha, Neb., to cost about \$100,000 with equipment.

Travel Air Mfg. Co., Wichita, Kan., has awarded general contract to H. W. Underhill Construction Co., 235 North Waco Street, for one-story aircraft manufacturing plant, 75 x 275 ft., for parts production and assembling, with extension, 15 x 40 ft., to cost about \$50,000 with equipment. Glenn H. Thomas, Wheeler-Kelly-Hagney Building, is architect.

Knapp-Monarch Co., St. Louis, has been organized to take over and consolidate A. S. Knapp & Co., 1413 Pine Street, manufacturer of insulated jugs, electric toasters, irons, etc., with main plant at Kansas City, Mo., and Monarch Co., Webster City, Iowa, manufacturer of sheet metal products, racks, etc. Both plants will be continued and expansion is planned. Company has arranged for stock issue totaling \$375,000, part of proceeds to be used for purpose noted. A. S. Knapp is president.

Schneider Draft Gear Corporation, 605 West Fifth Street, Kansas City, Mo., has been organized to manufacture railroad draft gears of special design. Plant is in operation.

Pecco Co., 2951 North Market Street, St. Louis, maker of industrial furnaces, has changed name to St. Louis Blow Pipe & Heater Co., Inc.

Expansion and improvement work in 1929 by Missouri-Kansas-Texas Railroad Co., St. Louis, to cost more than \$5,000,000, calls for new locomotive house and shops at Fort Worth, Tex., to cost about \$400,000; completion of engine house and

repair shops at Smithville, Tex., to cost about \$175,000, and similar facilities at other points. Of \$800,000 to be expended for repair shops and engine houses, \$150,000 will be for shop equipment.

Smiley Equipment Co., 202 Carmen Building, Kansas City, Mo., has been appointed district representative for Terry Steam Turbine Co., Hartford, Conn., maker of turbines, gears and shaft couplings.

New England

BOSTON, Jan. 14.—Aggregate machine tool sales in this territory the past week were larger than for any similar period in several months. Most sales were for one or two tools, but occasionally a manufacturer took three to six machines. In new tools planers, milling machines and lathes predominated.

Sales of used tools included a variety of makes and types of machines. The largest individual sale reported was a Kempsmith, Miller, Brown & Sharpe surface grinder, gear hobber, and a 12-in. lathe to a Massachusetts shop. Most of the tools had been under negotiation for a month or longer. New inquiries are more numerous, but are for one or two tools. It is intimated that one and possibly two of the railroads will issue small lists before the end of January.

Kidder Press Co., Broadway, Dover, N. H., will build an addition to its machine shop.

Max J. Unkelbach, 52 Main Street, Bristol, Conn., architect, is taking bids on a six-story plant, 50 x 105 ft., for E. Ingraham Co., 392 North Main Street, manufacturer of clocks and watches.

New London Ship & Engine Co., New London, Conn., will be dissolved. Plant, good will, stock and equipment have been taken over by Electric Boat Co. which will continue operations.

Whittlesey Body Co., Bridgeport, Conn., automobile bodies, has acquired exclusive American rights to manufacture Avro Avian sport biplanes from A. V. Roe Co., Ltd., London. More than 40,000 sq. ft. of Bridgeport plant will be given over to this line.

G. E. Prentice Mfg. Co., New Britain, Conn., manufacturer of metal trimmings, automatic fasteners, etc., has awarded general contract to W. H. Allen & Co., 12 Glen Street, for two-story addition, to cost about \$45,000 with equipment.

Mason Regulator Co., Medway Street, Dorchester, Mass., manufacturer of recording instruments, has filed plans for two-story addition, 80 x 130 ft., to cost about \$50,000 with equipment.

Wallace Barnes Co., Bristol, Conn., manufacturer of springs, and other wire and steel specialties, has awarded general contract to Aberthaw Co., Boston, for two of three proposed additions, one story, 65 x 130 ft., and one story, 85 x 192 ft., at Forestville. Program will cost about \$400,000 with equipment.

New England Power Association, Worcester, Mass., has power dam construction in progress on Connecticut River near Barnet, Vt. and Monroe, N. H., and will begin work on upper dam near Littleton, N. H., late in spring, structures to be used in connection with hydroelectric power development with initial capacity of 300,000 hp., entire project to cost more

than \$35,000,000, with steel tower transmission lines.

New Bedford Brass Foundry, 42 Front Street, New Bedford, Mass., has plans for two-story addition, including improvements in present foundry, to cost more than \$30,000 with equipment.

Bullard Machine Tool Co., Bridgeport, Conn., has changed firm name to Bullard Co.

Atlas Mfg. Co., New Haven, Conn., maker of shelf brackets, coat and hat hooks, tin spoons, knife sharpeners and wire formings, and Ansonia Novelty Co., Ansonia, Conn., manufacturer of thimbles, oilers, pencil sharpeners, pencil clips and glove dryers and metal stampings, have been consolidated as Atlas-Ansonia Co., with main office and plant at New Haven. Equipment is being installed and company expects to add other products to its line. No change in personnel has been made.

Kelsey Air Gage Co., Inc., Clinton, Conn., has been organized to manufacture air gage for hand pumps and garage hose. Gage will be made under contract for which awards have been made. It is not in market for materials or equipment.

Robert Gair Co., 420 Lexington Avenue, New York, manufacturer of corrugated paperboard and fiber containers, with plants at Brooklyn, Tonawanda, N. Y., and New London, Conn., has purchased plants and business of Warner & Childs Co., Medford, Mass., manufacturer of kindred products. Acquired plants will be continued as branch factories and expansion carried out. R. M. Taylor, heretofore president Warner & Childs Co., will continue in charge at Medford.

Indiana

INDIANAPOLIS, Jan. 14.—Dudlo Mfg. Co., Wall Street, Fort Wayne, manufacturer of wire and cables, a division of General Cable Co., New York, has awarded general contract to Indiana Engineering & Construction Co., Central Building, for one-story addition, 175 x 193 ft., to cost about \$80,000 with equipment.

Auburn Automobile Co., Auburn, has purchased Central Mfg. Co., Connersville, Ind., manufacturer of automobile bodies, and will operate as a subsidiary, consolidating with branch plant at Connersville. Auburn company is planning call for bids on general contract before close of month for addition to plant at Auburn, to cost about \$65,000. A. M. Strauss, Cal-Wayne Building, Fort Wayne, Ind., is architect.

Muncie Gear Co., Muncie, is being organized by W. A. and Kenneth A. Spurgeon, Muncie, and associates, to take over and consolidate Muncie Gear Works, with other organizations. A stock issue is being arranged, to total about \$1,400,000, part of proceeds to be used for expansion.

John Deere Plow Co., Third Avenue, Moline, Ill., manufacturer of agricultural implements, has begun construction of four-story factory branch and distributing plant at Fort Wayne, 100 x 100 ft., to cost about \$140,000 with equipment. O. A. Eckerman is construction supervisor, in charge.

Wright-Tuttle Aircraft Motors Corporation, Anderson, recently organized, has acquired former local plant of International Rubber Works and will remodel to manufacture Renard radial motors, for which United States rights have been secured from Renard Aviator Motors Co., Brussels, Belgium. Parts and assembling

departments will be established; production is scheduled to begin within 60 days. V. L. Wright is president, and C. E. Tuttle, vice-president.

City Council, Indianapolis, has authorized construction of power plant at city hospital, to cost about \$450,000 with equipment, and expects to ask bids on general contract in about 60 days. C. R. Ammerman, Continental Building, engineer, will prepare plans. It is purposed to construct a machine shop at institution, as well as automobile service and repair building.

Coulter Boiler & Sheet Iron Co., Muncie, maker of smoke stacks, tanks and wire cross products, has purchased building and equipment of Muncie Boiler & Sheet Iron Co., Franklin and Second Streets, Muncie, and will remove equipment to its new plant.

Melaun Mfg. Co., Indianapolis, maker of wrought iron ornaments, steel moldings and metal products, has removed main office and works from 330 Orange Street to 144-46 East Morris Street.

Chicago

CHICAGO, Jan. 14.—Sales of machine tools in this district are as numerous as in December, but purchasers are more widely scattered. Several lists of old standing are moving slowly with little promise that they will be closed before the end of this month. Deliveries are tightening and it is not uncommon in a few makes of machine tools to have promised deliveries deferred two to four weeks as shipping dates approach.

The local trade has little knowledge of a railroad buying movement beyond the fact that the Santa Fe has made public its budget for 1929 improvements and betterments. The Chesapeake & Ohio will buy a wheel press and the Chicago & North Western is asking for prices on a bench grinder. There is a substantial demand for the better grade of used tools.

Federal Pipe & Supply Co., 900 South Campbell Avenue, Chicago, will erect a new three-story pipe fabricating plant and power house, to cost \$250,000.

Empire Oil & Gas Co., Bartlesville, Okla., is preparing plans for a 15,000-bbl. oil refinery on a 372-acre tract between Indiana Harbor and Gary, Ind.

Grigsby-Grunow Co., 5801 Dickens Avenue, Chicago, manufacturer of radio equipment will build an addition to provide 150,000 sq. ft. additional floor space.

Teletype Corporation, 1410 Wrightwood Avenue, Chicago, formerly known as Morkrum-Kleinschmidt Co., manufacturer of automatic telegraph equipment and parts, has plans for a three-story addition, 100 x 125 ft., to cost more than \$225,000 with machinery.

Buda Co., Harvey, Ill., manufacturer of railroad supplies and equipment, internal combustion engines, etc., has acquired 3 acres adjoining 15-acre site of present works, and plans expansion.

Rockford Showcase & Fixture Co., 1034 Elm Street, Rockford, Ill., has plans for two-story addition, 46 x 51 ft., to cost about \$24,000. Peterson & Johnson, Swedish-American Bank Building, are architects.

Officials of Consolidated Steel Strapping Co., 2600 North Western Avenue, Chicago, have organized Signode Steel Strapping Co., with capital of \$3,000,000 and 250,000 shares of stock, no par value.

to take over and operate present organization. Expansion is planned. Company has arranged for stock issue of \$1,670,000, part of fund to be used for purpose noted. John W. Leslie is president.

Imperial Machine Co., 1611 Central Avenue, Minneapolis, Minn., has awarded general contract to Lind-Gustafson-Klopfer Co., 315 N. E. Sixth Street, for one-story addition to cost about \$30,000 with equipment. Sund & Dunham, Essex Building are architects.

Roy Mfg. Co., 22 West Austin Avenue, Chicago, manufacturer of store and display fixtures, metal trays, etc., has leased five-story and basement building at 220-22 West Huron Street, and will remodel for new plant. Additional machinery will be installed.

Public Service Co. of Colorado, Gas & Electric Building, Denver, is planning extensions and improvements in steam-operated electric power plant at Boulder, Colo., to cost more than \$350,000 with equipment.

Cleveland

CLEVELAND, Jan. 14.—Machine tool sales continued fair the past week. While the volume is lighter than in December the first two weeks of January made a good showing for a period of the year which is usually rather quiet. Business is well distributed and most orders are for single machines. Automatic screw machines and turret lathes are moving well in single unit orders. Deliveries on some lines have become more extended, particularly on cylindrical grinders and automatic screw machines, on which some makers are not promising shipments before April or May.

The market is showing an upward price tendency. Automatic screw machines have advanced $7\frac{1}{2}$ per cent and some makes of shapers have been given a similar advance. Lathe and drill chucks have been marked up, now being quoted at 15 per cent off list to consumers as compared with the former discount of 25 per cent.

With the growth of the airplane industry a field is developing for machine tools for equipping repair plants for airplanes. Thompson Aeronautical Corporation, Cleveland, is equipping a machine shop at its hangar at Cleveland Airport for repairing airplane motors and other parts. Several thousand dollars are being invested in equipment for this shop, which will include lathes, drilling machines, ring grinders, cylinder grinders and a hydraulic arbor press.

Lamson & Sessions Co., Cleveland, has placed contract for a four-story building, 83 x 185 ft., for heat treating and plating departments. It will be equipped for cadmium, chromium, copper and brass plating.

Arctic Ice Machine Co., Canton, Ohio, is planning erection of a \$100,000 addition to manufacture dairy equipment.

Iron Fireman Mfg. Co., operating a plant at Portland, Ore., has leased space at 3127 Superior Avenue, Cleveland, to manufacture automatic stokers for heating plants.

Sterling Brass Co., 9600 St. Catherine Avenue, Cleveland, is enlarging its plant by erection of a two-story and basement building, 44 x 144 ft. It will also build an addition to its chrome nickel plant.

Hunt & Dorman Mfg. Co., 1600 East Twenty-fourth Street Cleveland, has leased factory at St. Clair Avenue and East Fifty-second Street, with 47,000 sq.

ft. of floor area, and will shortly move to its new quarters which will provide considerable additional floor space.

Midland Steel Products Co., Cleveland, has increased by 50 per cent capacity of its steel freight car door division. A new panel press has been installed and a third production line has been added.

National Safe & Lock Co., Cleveland, which a few years ago was merged with Steelcraft Corporation of America, latter corporation going into receivership, has been taken out of receivership by bond holders and former name restored. Burton French, Chicago, has been elected president. The plant will be operated under D. D. Robinson as vice-president and general manager. He has been operating plant under receivership.

Board of Education, Fourth and Rockwell Streets, Cleveland, is asking bids on revised plans until Jan. 26 for one and two-story addition to vocational foundry on Eagle Avenue, to cost about \$45,000 with equipment. G. M. Hopkinson, Auditorium Garage Building, is architect.

Arctic Ice Machine Co., Market Avenue, South, Canton, Ohio, manufacturer of ice-making machinery, has plans for one-story addition to cost over \$85,000 with equipment.

Eller Mfg. Co., Canton, Ohio, manufacturer of metal stampings, etc., has awarded contract to Hiner Structural Steel Co., Canton, for one-story addition, to cost about \$70,000 with machinery.

Penn-Ohio Edison Co., Youngstown, Ohio, is planning 1929 expansion program to cost about \$5,000,000, including additions to generating plants, power substations, transmission and distributing lines.

Gramm Motors Co., Inc., Delphos, Ohio, manufacturer of motor trucks, will soon take bids on general contract for two-story addition, primarily for assembling, to cost more than \$50,000 with equipment. W. M. DeKalb, American Bank Building, Lima, Ohio, is architect.

B. F. Goodrich Co., Akron, Ohio, is expected to ask bids before close of month for three-story addition to fabric mill at Thomaston, Ga., including two two-story and basement wings, project to cost over \$450,000 with machinery. Robert & Co., Inc., Bona Allen Building, Atlanta, Ga., is architect and engineer.

King Co., Sheffield, Ala., maker of cast iron street lighting products, with plant at Sheffield, has been reorganized and has entered into agreement with Union Metal Mfg. Co., Canton, Ohio, to locate its general and sales offices at Canton, its products to be sold by Union company through that company's agents, General Electric Merchandise Distributors' Association and Graybar Electric Co., Inc.

Milwaukee

MILWAUKEE, Jan. 14.—Machine-tool demand is getting back to the active pace of December, with automotive industries perhaps the best buyers. There is excellent inquiry from nearly all other lines of industry and the trade looks for a good January volume. Production is going forward at the recent high rate and there still is some complaint over the shortage of skilled machine shop labor.

Further enlargement of plant of Kearney & Trecker Corporation, Milwaukee, manufacturer of milling machines, is in prospect. Petition has been made to West Allis Common Council for closing Sixtieth Avenue, from National

Avenue to Elm Street, to enlarge plant site, now built to its limit.

Hill, Hubbell & Co., San Francisco, will start work soon on another unit of their plant at Milwaukee, erected two months ago, because of demand for waterproofing electrically welded oil and gas line pipe manufactured by A. O. Smith Corporation. Company is a subsidiary of General Paint Corporation, San Francisco, and also plans a new factory in Pittsburgh. Works also are maintained at Youngstown and Indiana Harbor, Ind. Herman Kramer is manager at Milwaukee.

Hamilton-Beach Mfg. Co., Racine, Wis., manufacturer of commercial and domestic utilities with fractional horse-power motors, has engaged Albert L. Flegel, Baker Block, to prepare plans for a new foundry unit, largely for aluminum and alloy casting.

Wisconsin Auto Body Co., 115 South Blair Street, Madison, Wis., is beginning work on a new factory, 66 x 150 ft., costing about \$35,000.

Northern Paper Mills, Day Street, Green Bay, Wis., is closing bids for a \$100,000 mill and factory addition. Equipment requirements include a 10-ton crane.

Hochenauer-Stresau Co., Inc., 711 Fifty-seventh Avenue, Milwaukee, has changed firm name to Swifton Mfg. Co.

Magnetic Mfg. Co., Milwaukee, maker of high-duty magnetic separators, magnetic clutches and special magnetic equipment, has added trade name Stearns to its equipment in addition to former name, High Duty. The designation is derived from names of company officers, R. H. Stearns, president and treasurer, and R. N. Stearns, secretary. Company name remains unchanged.

Pacific Coast

SAN FRANCISCO, Jan. 9.—General Water Heater Corporation, 1610 Hooper Avenue, Los Angeles, manufacturer of domestic automatic water heaters, is having plans drawn for new plant at Burbank, consisting of two main units, each one story, 60 x 380 ft., and 120 x 120 ft., to cost about \$90,000 with equipment.

Pacific Pump Co., Huntington Park, Cal., has plans for one-story addition, 73 x 80 ft., to cost about \$20,000 with equipment.

Inglewood Union High School District, Inglewood, Cal., will build a one-story manual arts shop in connection with a new high school group in Lawndale district, entire project to cost about \$400,000. Bids have been asked on general contract. T. C. Kistner & Co., Architects' Building, Los Angeles, are architects.

Kittle Mfg. Co., 638-40 Santa Fe Avenue, Los Angeles, manufacturer of metal stampings, automobile accessories, etc., has awarded general contract to V. P. Gilbert, Citizens' National Bank Building, for one-story addition, 70 x 120 ft., to cost about \$26,000 with equipment.

Southern Oregon Sales Co., Medford, Ore., is planning installation of a cold storage and refrigerating plant in connection with three-story fruit packing plant, 130 x 270 ft., latter to be provided with conveying, packing, and other mechanical equipment. Entire project to cost about \$100,000.

Frye & Co., 2103 Ninth Street, South, Seattle, manufacturer of automobile bodies, has plans for new one-story unit to cost about \$23,000 with equipment.

Plans are being prepared by C. L. Gogerty, Guaranty Building, Los Angeles,

architect, for second unit of Grand Central Airport, near Glendale, Cal., a project of Real Estate Investment Co., consisting of main hangar, 130 x 290 ft., with repair and reconditioning shop and other mechanical buildings, to cost \$225,000 with equipment.

Mount Diablo Union High School District, Mount Diablo, Cal., plans one-story manual arts and vocational shop in connection with additions to high school to cost \$350,000. Bids will soon be asked on general contract. W. H. Weeks, Hunter-Dulin Building, San Francisco, is architect.

J. L. Latture Equipment Co., 312 East Madison Street, Portland, Ore., has been appointed distributor in Oregon, Idaho, eastern Washington and Columbia River counties for shovels and locomotive cranes made by Link-Belt Co., Chicago.

Portland Machinery Co. and J. E. Martin Co., Portland, Ore., machinery distributors, have been consolidated under name of former company and will maintain plant at 62 First Street.

Timm Airplane Corporation, 901 North San Fernando Road, Glendale, Cal., has been organized to manufacture Collegiate monoplane, designed for training purposes. Factory occupies 15,000 sq. ft. of floor space and additional property has been purchased for expansion. Provision for materials and equipment has been made.

Republic Steel Package Co., Richmond, Cal., has been merged with Bennett Pumps Corporation, Muskegon, Mich., and Service Station Equipment Co., Bryan, Ohio. Former company has been manufacturing steel barrels and underground storage tanks for several years. Combined companies will be operated as separate units, but sales will be handled under Bennett Pumps Corporation. S. B. Merry is president of California company.

Foreign

PLANS have been arranged by Lokomotivfabrik J. A. Maffei Aktiengesellschaft, Munich, Germany, and Lokomotivfabrik Henschel & Sohn, G.m.b.H., Kassel, Germany, manufacturers of locomotives, tractors, road rollers, etc., for a consolidation of interests. Both plants will be maintained and expansion in output is planned. C. Canaris is chairman of first noted company and will be managing direction of latter organization.

DuPont Rayon Co., River Road, Buffalo, a subsidiary of E. I. duPont de Nemours & Co., Wilmington, Del., has plans for a rayon mill in France to cost over \$1,500,000. A group of company engineers has sailed for that country to carry out project.

Tenders will soon be asked by Government Department of Works, Madrid, Spain, for construction of railroad from Zafra to Villanueva de Fresno, to develop a through line from Seville to Lisbon. Project is reported to cost more than \$350,000 with equipment.

Ort Tool Supply Corporation, under direction of Technical Advisory Council of Ort, a Russian organization for supplying "declassified" former Russian traders with tools and machinery for shops and factories, including home industries, represented in United States by Ort Reconstruction Fund, 331 Madison Avenue, New York, Dr. David Lvovitch, is planning purchase of tools and equipment for distribution in Russia. It is said that orders in amount of \$600,000 have been placed during past four months, and business in 1929 will aggregate \$1,000,000.

Pan-American Airways, 100 East Forty-second Street, New York, is planning extensions in hangars, machine and mechanical shops and airports at Tegucigalpa, San Lorenzo and Tela, Honduras, including installation of equipment to cost over \$200,000.

A company at Curitiba, State of Parana, Brazil, has contracted with State government for construction of hydro-electric power plant near place noted, with initial capacity of 5000 hp. Information at office of Bureau of Foreign and Domestic Commerce, Washington, reference Brazil No. 295382.

Simplex Engineering Co., Washington, Pa., manufacturer of glass house machinery, has contracted for complete construction of glass-manufacturing plants at Berazategui, Argentina; Sao Paulo, Brazil; Bavaria, Germany, and York, England. Plans and specifications will be carried out under direction of C. E. Frazier, president.

Guayaquil & Quito Railway Co. is in market for a ditching machine with accessory equipment mounted on a flat car, crane mounted in the same way, stone crusher equipped with 2-in. screen mounted on flat car, and a concrete mixer of ½-cu. yd. capacity with auxiliary equipment also mounted on flat car. Cars must be equipped with motor using crude oil and motor is to be available to actuate machinery. Cars are to be run over a 42-in. gage road with maximum grade of 5.5 per cent. Information as to prices, conditions, etc., is to be sent, preferably in Spanish, to V. M. Garces, chief engineer of railroad, Box 37, Guayaquil, Ecuador, S. A.

Canada

TORONTO, Jan. 14.—More activity is reported in machine tool sales in this market. Inquiries are out for equipment for waterworks, sewage and electric plants from several municipal governments, and other business of this nature is pending. Several large orders for pulp and paper mill machinery have been closed recently. The manufacturing industry, as a whole, is showing considerable interest in the market and many companies are replacing obsolete machines with more modern makes.

Bids will be received by S. H. Kent, city clerk, Hamilton, Ont., until Feb. 20, for supply, delivery and erection of three horizontal centrifugal booster pumps for extension of Ferguson Avenue pumping station.

Bids recently received for a \$70,000 pumping station and filtration plant at Dolbeau, Que., were too high, and plans and specifications will be revised and new bids called.

Canada Cycle & Motor Co., Ltd., Eagle Avenue, Weston, Ont., will build one-story addition, 100 x 100 ft., and has awarded general contract to C. H. Smillie, 166 John Street.

Canadian Wirebound Boxes, Ltd., 1000 Gerrard Street East, Toronto, has purchased former Hinde & Dauche property adjoining, and is having plans prepared for an addition.

Canadian Hanson & Van Winkle Co., Ltd., 15-25 Morrow Avenue, Toronto, manufacturer of foundry equipment, etc., will build addition to cost \$10,000. Contract has been awarded to F. J. Tushingham, 375 Pacific Avenue.

Inter-Lake Tissue Mills, Merritt Street, Merritt, Ont., has awarded contract to

W. J. Trimble, 73 Adelaide Street West, Toronto, Ont., for a \$40,000 addition, three stories and basement, 70 x 100 ft.

Several sub-trades have been awarded for an addition to cost \$40,000 for National Steel Car Corporation, Hamilton, Ont., for which Frid Construction Co., has general contract; mechanical trades to be let later.

Robert Mitchell Co., Ltd., 750 Bellair Street, Montreal, plans construction of a foundry at St. Laurent, Que., one story, 200 x 600 ft.

Western Clock Co., Peterborough, Ont., is having plans prepared for an addition to double present capacity.

Canadian National and Wabash railroads have purchased property at Riverside, Tecumseh, Ont., for new terminal yards, to include round houses, machine shops, car repair plants, and other structures.

Standard Radio Mfg. Corporation, Toronto, has completed negotiations with Toronto Harbor Commissioners for purchase of a site on Fleet Street, for erection of a three-story plant, 250 x 300 ft.

Western Canada

Directors of new British Columbia Power Corporation, Vancouver, B. C., through W. G. Murrin, president, British Columbia Electric Railway Co. have announced plans for another hydro-electric project on Stave River at Ruskin, B. C., to cost \$7,250,000, work to begin at once. Initial installation will develop 43,000 hp. in one generator, but foundations will be laid for a second generator of same size. Power development at Bridge River also will be enlarged at a cost of \$1,000,000.

West Kootenay Power & Light Co., West Kootenay, B. C., has plans for installation of a power plant on Pend Oreille River to develop 80,000 hp., and cost between \$4,000,000 and \$6,000,000.

L. T. Alden, 470 Granville Street, Vancouver, B. C., is preparing plans for a mill and grain elevator at foot of Kenard Avenue, to cost \$1,000,000, for W. E. McCaw & A. M. Dollar, care of the Merchants Exchange Building, Vancouver.

No Lost-Time Accident in Ten Years

Ten years without a lost-time accident is the record of the members of the electrical repair department of the Middletown, Ohio, plant of the American Rolling Mill Co. These men, under the leadership of Charles F. Deiss, recently were initiated into the Ten-Year Safety Club at a banquet given by the management of the company. To Dec. 29 the department had worked 765,629 man-hours without a lost-time accident.

The Ten-Year Safety Club was started by the electrical construction group of the Middletown plant, which completed 10 years in December, 1927. Both this group and the electrical repair group are units in the Middletown maintenance department, which has established a record of 830,521 man-hours without a lost-time accident.

Another unusual record is being made at the Butler, Pa., plant of the Columbia Steel Co., subsidiary of the American Rolling Mill Co. Up to Dec. 27, 1928, the entire plant had gone 66 days without an accident, and still was going strong.

